THE

Volume Fifty-Four

Journal

OF THE

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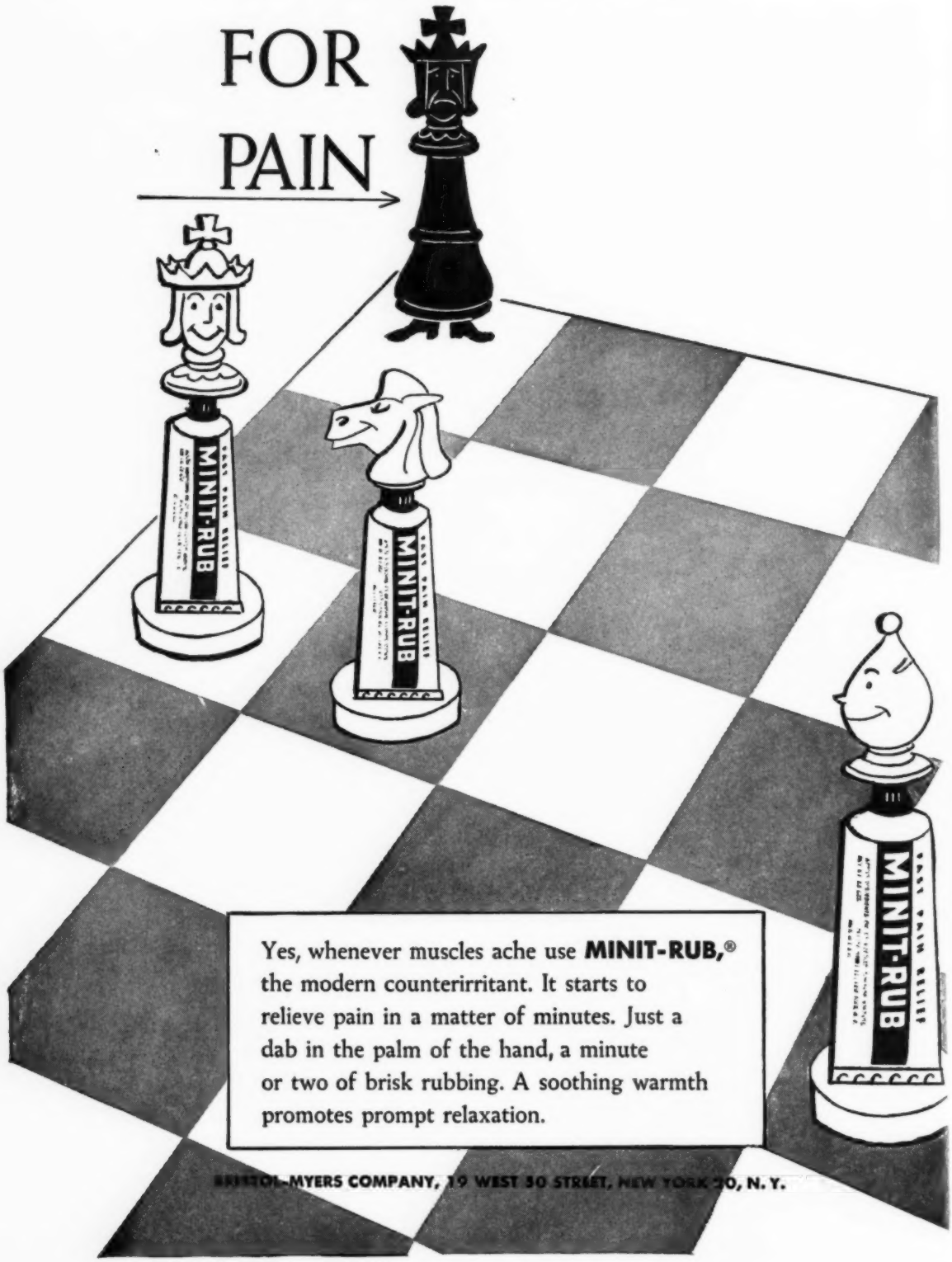

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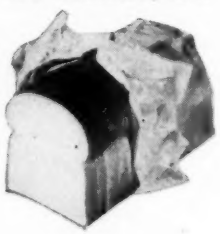

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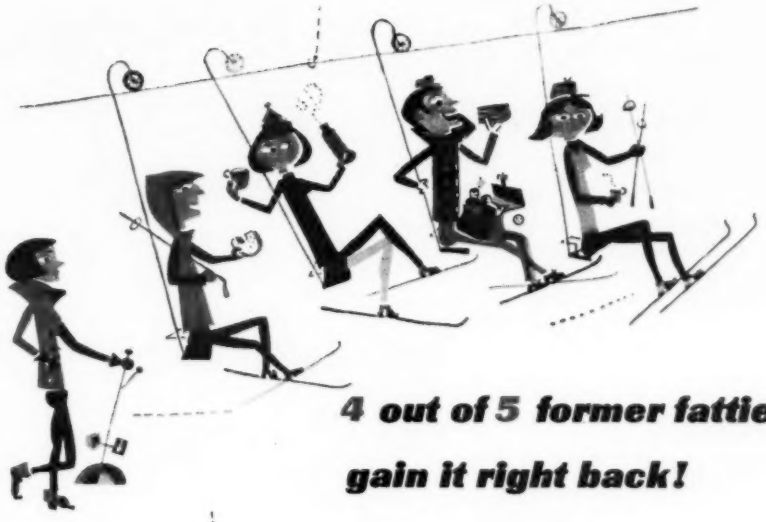

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*Aaron, H.: *Weight Control, Consumer Reports* 17:100 (Feb.) 1952.

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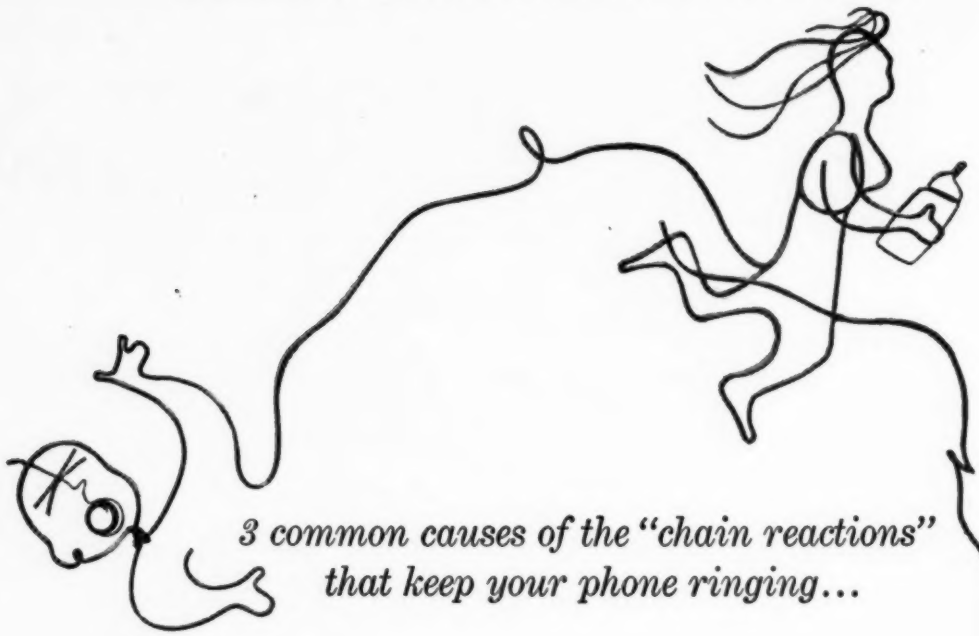

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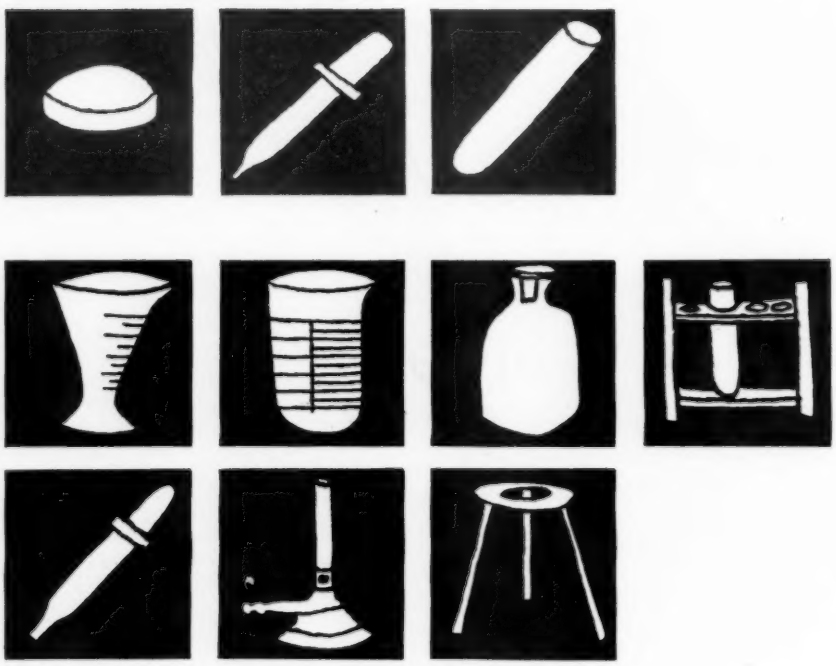

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2. Gray, C. H., and Millar, H. R.: Brit. M. J. *4824*:1361 (June 20) 1953.

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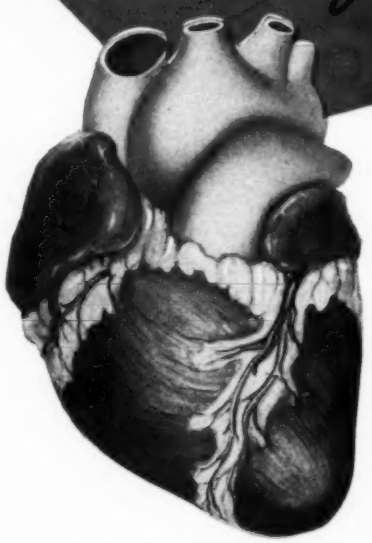

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Warning: May be habit-forming.

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Ascorbic Acid	20 mg. (1/3 gr.)
Cortisone Acetate	5 mg. (1/12 gr.)

RECOMMENDED DOSAGE: For acute cases, 8 to 10 *Entabs* daily in divided doses. For maintenance, 1 or 2 *Entabs* four times daily.

SUPPLIED: Bottles of 50 and 200 *Entabs* (enteric-coated tablets).

1. Committee of American Rheumatism Association: Primer on the Rheumatic Diseases, J.A.M.A. 152:323, 405, 1953. 2. Robinson, W. D., et al.: Tenth Rheumatism Review, Ann. Int. Med. 39:498, 1953. 3. Dry, T. J., et al.: Proc. Staff Meet., Mayo Clin. 21:497, 1946. 4. Wiesel, L. L., et al.: Brooklyn Hosp. J. 8:418, 1950. 5. Wiesel, L. L., and Barritt, A. S.: Am. J. M. Sc. 227:74, 1954.

Literature on request

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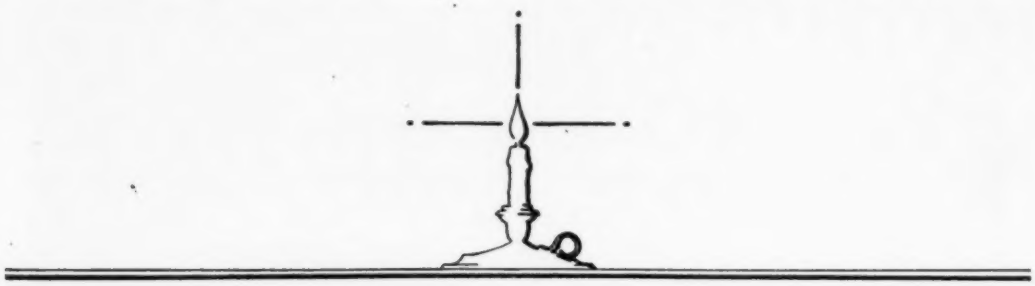
A BETTER LIGHT FOR DIOGENES



DIOGENES was a Greek, and a philosopher. He belonged to the school of cynics. Which means that he associated with a group of men who didn't believe in practically anything.

Now among the many things Diogenes didn't believe in was an honest man. But he wanted to give every one a chance, so he roamed the highways and byways of Athens with a lantern which he would flash on the faces of the passers-by, endeavoring to find in their features some sign of integrity.

Nothing ever came of his labors. (According to him). But because he was a philosopher and a reasonably fair man, Diogenes admitted that it *could* be his lantern. And so, he complained, "If only I could have a better light . . ."

And many people tried to give Diogenes a better light . . . If you're as old as sixty, you may remember that a fellow named Welsbach thought up a contraption that you fitted over a gas-jet . . . Then there was that young fellow, Tom Edison, who worked out the electric light bulb. And another genius planned a new type of light called fluorescent . . . But none of them succeeded in inventing a light that helped Diogenes.

Then a man comes up with still another kind of light—a poor sort of thing. It was a little blob of wax, wrapped around a piece of string. And one Christmas Eve he took it over to Diogenes' home. There the old fellow was, visiting with his cynic cronies, and saying as how "No, definitely not! There just wasn't such a thing as an honest man." And the cynics all nodded their heads in agreement. Then the man came in with his candle, and he lighted it. And Diogenes could hardly believe his eyes! Because as the soft, mellow beams shone out from the Christmas candle and fell on the faces around him, Diogenes could see, just as plain as could be, that there wasn't a really dishonest man in the entire gathering.

And ever since then, at Christmas time, the little Christmas candles have made fools out of cynical people by proving that it is seldom that you can find a human being who, 'way down deep inside, isn't essentially honest . . . if you'll only look at him in the proper light.

From a fantasy by K. Miles

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Mephenesin . . . . . 250 mg.
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(does not contain homatropine methylbromide)
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MEPHOSAL TABLETS
For rheumatic cases with associated g.i. disturbance

Each tablet contains:
Mephenesin . . . . . 125 mg.
Sodium Salicylate . . . . . 125 mg.
Homatropine Methylbromide . . . . 1.25 mg.
Dose: 2 or 3 tablets every 3 or 4 hours.

MEPHOSAL ELIXIR
For rheumatic cases with associated g.i. disturbance

Each teaspoonful (4 cc.) contains:
Mephenesin . . . . . 400 mg.
Sodium Salicylate . . . . . 400 mg.
Homatropine Methylbromide . . . . 2.5 mg.
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Special note: MEPHOSAL TABLETS and MEPHOSAL ELIXIR both contain homatropine methylbromide.

All dosage forms should be given preferably after meals or with a little milk.

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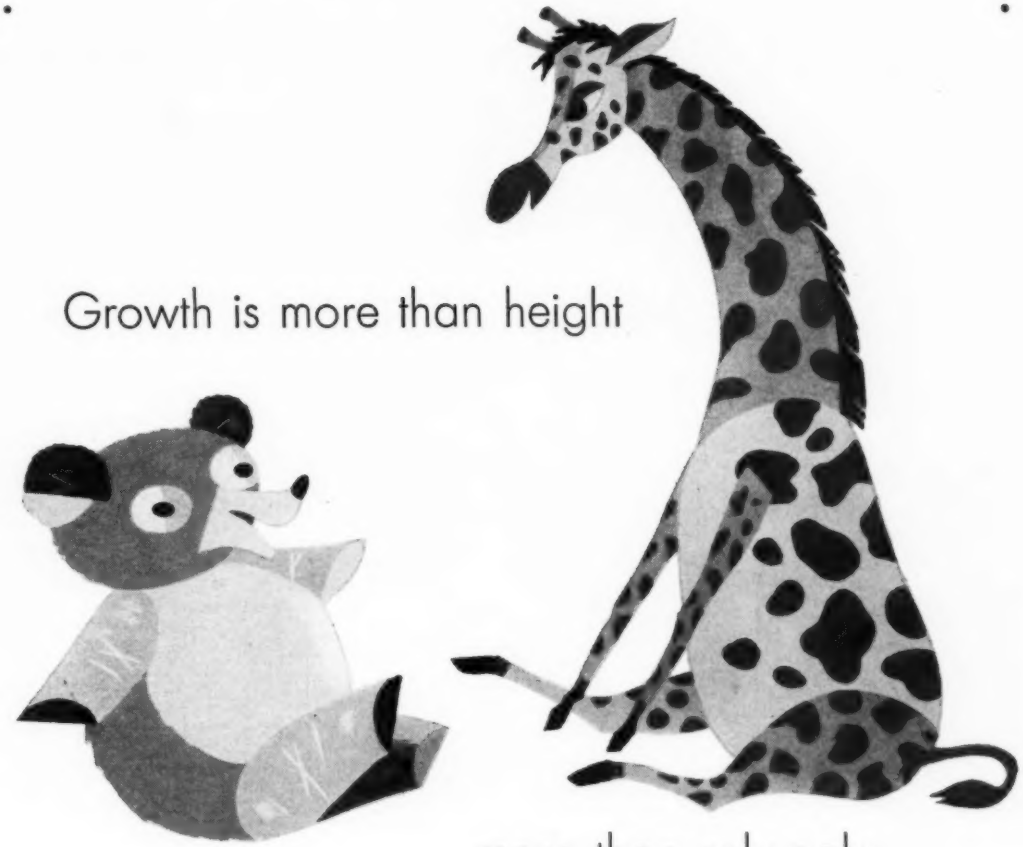

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A i.u.	20	10
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Recommend **WHEAT CHEX** for breakfast—for between-meal and bedtime snacks instead of sweets.

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Prompt
Symptomatic Relief
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MULTIPLE ANTIHISTAMINE •
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Taken at the onset of symptoms, Multihist + APC quickly suppresses the troublesome rhinorrhea of the common cold and relieves such general symptoms as headache, backache, and other discomfort. Each capsule provides 15 mg. of the Multihist combination (5 mg. each of Pyrilamine maleate, Prophenpyridamine maleate, and Phenyltoloxamine dihydrogen citrate) together with aspirin 3½ gr., phenacetin 2½ gr., and caffeine ½ gr. Because each antihistamine is provided in an amount virtually incapable of producing drowsiness or lethargy, the incidence of side effects is greatly reduced. Average dose, 2 capsules initially, followed by 1 capsule at 4-hour intervals. Available on prescription through all pharmacies.

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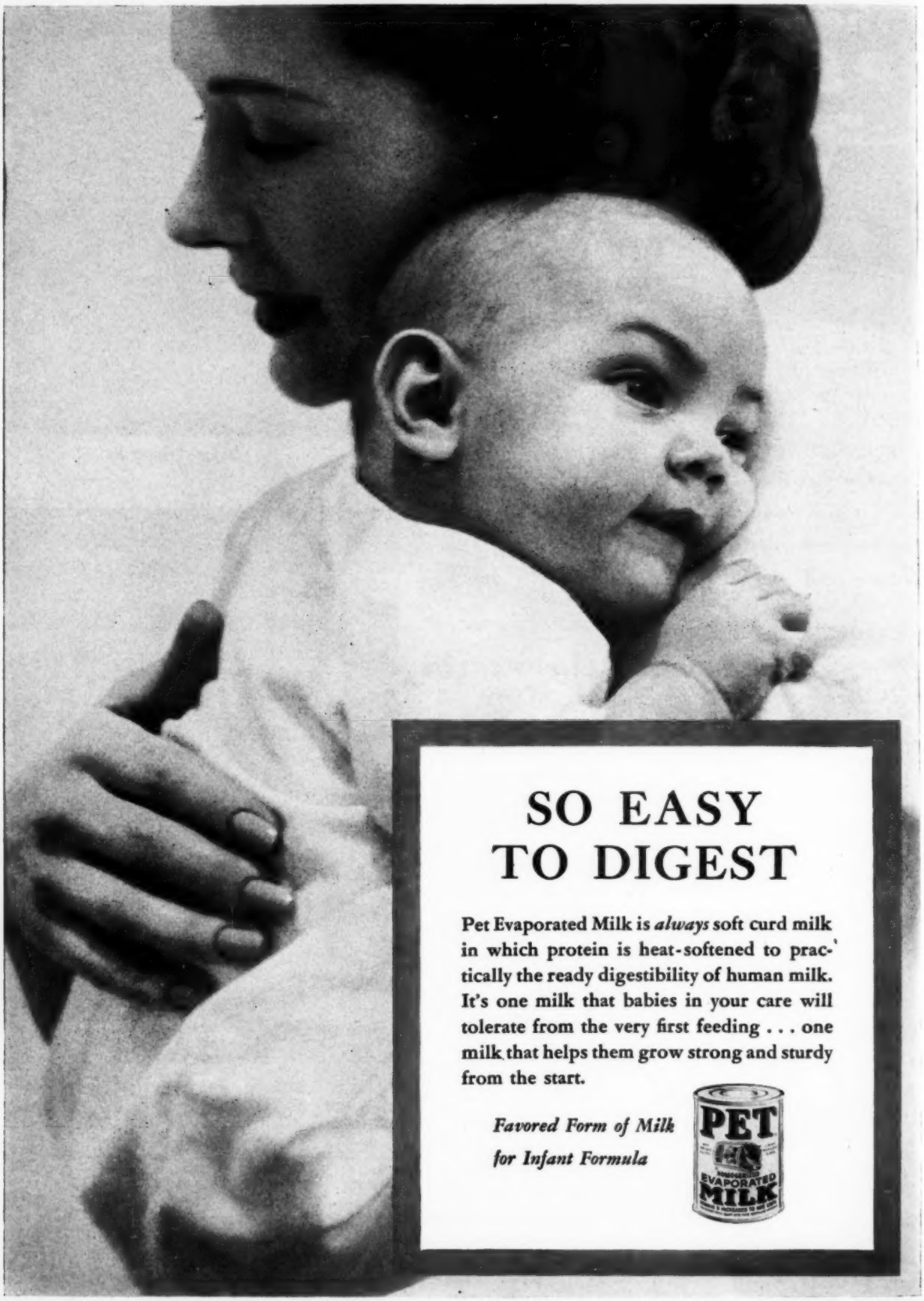
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*Sulzberger, Marion B., and Wolf, J.: Dermatologic Therapy in General Practice, ed. 3, Chicago, Year Book Publishers, Inc., 1948, p. 107.

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The Scope of Osteopathy at Mid-Century*

ANGUS G. CATHIE, D.O.

Professor of Anatomy
Philadelphia College of Osteopathy
Philadelphia

Many excellent addresses have been delivered honoring Dr. Andrew T. Still, soul stirring to the point of emotionalism in some instances, addresses enumerating the educational and legislative problems with which a young profession has been faced, and a few regarding Dr. Still's homespun philosophy and expressions. They all do him honor but there seems to have been left unsaid, although suggested, that which reveals his stature as a genius living and working years ahead of his time.

Dr. Still's knowledge was profound although his formal education, as we think of formal education today, was limited. His professional training was gained through successes and failures, and of both he asked, "Why?" Not only did he ask why, but he sought for that which had been overlooked or not fully understood. He sought the laws of the universe that might be applied to man, and by so doing he made use of that which had been discovered by those who had gone before him. His inquiring mind followed a definite pattern, for it was well ordered. (1) He was in possession of facts that had been proved by men of science. (2) He developed a philosophy for which he sought clinical proof. (3) These he coupled with insight, a quality not to be confused with intuition. (4) He had the courage of his convictions and, what is more, the courage to break with convention. Thus a genius found his calling; thus the osteopathic profession was created from the emerging need in the life of man. Many have stopped their progress at minor points or have been satisfied with minor accomplishments, but the osteopathic school of medicine has from the beginning constituted a sector of medicine with major potentialities.

Dr. Still made use of the works of such men as Leonardo da Vinci, Pascal, and Sir Isaac Newton. He made use of the fact that examples of the principles of engineering can be demonstrated in the human body. Because of this knowledge, and his ability to visualize it in operation, he placed great emphasis upon structure and function. Today he would be looking at us to see if we have developed these ideas and would ask if we had combined the application of this knowledge with current understanding of hydrodynamics and thermodynamics in the study and care of man. He would recognize with great satisfaction the observations of the researchers in the field of the biologic sciences that continue to give authoritative scientific evidence of the accuracy with which these principles can be applied to the human body. Conversely, he would regard with disappointment and deep concern the lack of scientific approach that so frequently characterized the application of what we call "osteopathic principles," hindering osteopathy's development and even jeopardizing its very existence.

Truly, our profession had its genesis not because of that which was taught in the medical schools or practiced in the field of medicine, but rather because of that which was neither taught nor practiced at that time.

The new school and its philosophy and principles were both evolutionary and revolutionary, and its name was an outgrowth of its founder's comprehension of a major segment of its individuality. The limitation of a definition of osteopathy is often the source of confusion and debate, yet, as Hulett[1] has said, osteopathy is a single word which, if compared with the terminology of other systems, is more expressive. He also points out that which is so true and so well expressed by Ladd,[2] who said that "the proper definition of a science is one of the latest and most difficult achievements of that science." It is to be recognized that a characteristic of the osteopathic school is that it offers a scientific approach to the study of man. It is that characteristic which has enabled this school to enjoy a healthy growth and will enable it to make a yet unrealized contribution to the mental and physical health of mankind.

A truth never ceases to exist. It may be distorted, misinterpreted, or even disregarded; it may be clarified, attain greater heights in the regard of men, or it may be combined with others. Today there is evidence of sincere attempts to study the facts, reaffirm the concept, and to develop the principles of osteopathy. The realization of such aims and accomplishments requires the presentation of our principles by men of ability, dynamic individuals who can transmit thoughts correctly and with scientific and intellectual honesty. This is the responsibility of our educational institutions directly and of the entire profession generally.

*Keynote Address presented at the Opening Session of the Fifty-Eighth Annual Convention, Toronto, Canada, July 12, 1954.

Evaluating the present, the profession finds itself working with renewed energy to advance its principles and concepts. It finds itself in the enviable position of being a leader with so great an opportunity that it must look well into the future. Through the leadership of a well-organized national organization, sound educational institutions, and active regional groups stretching beyond international borders, we are in a position to grasp opportunities hitherto unrecognized, if not impossible.

At a relatively early period of its history, members of the osteopathic profession became aware of the need for a national organization and founded the one which is now the American Osteopathic Association, built upon the principle and dedicated to the service of advancing the public health. Perhaps there is no better or quicker means of obtaining an over-all picture of its scope than to refer to the first pages of its YEARBOOK AND DIRECTORY. Here we find listed the Department of Professional Affairs composed of seven subdivisions, the Department of Public Affairs that includes five subdivisions, the Department of Public Relations, and nine unassigned committees. At the Chicago headquarters there is a staff of over fifty full-time employees whose duty it is to handle the vast amount of detail that is a very necessary, yet often an unrecognized part of so large an operation. The affiliated organizations number twenty-one, and there are nine specialty colleges and ten boards of specialty certification. At the state level there are the various divisional societies. A study of any one of the subdivisions mentioned reveals some important phase of endeavor essential to the efficient operation of a growing profession.

That such an organization exists today is living testimony to the large numbers who, in the years gone by, were willing to pioneer and who practiced without the all-inclusive rights of other doctors or the advantages of hospitals. They succeeded because they had something different to offer and because they were able to accomplish that which had hitherto been unknown. Progress in the future will depend upon how well we study and apply those fundamental principles that characterize osteopathy and how well we visualize the changes that have taken place together with the alteration in structure that may have been responsible for the changes. "Let us not complacently beget indifference lest other interests be permitted to narrow the influence of a trust which exists for the good of man."[3] This quotation is so applicable to those whose training has been founded upon that which is basic that I feel it has a place in our thinking.

EDUCATION

About 100 years ago a Finn named Esias Tegner[4] said, "Let no man find his honor and glory in the past, but let each man diligently in the present strive to make his honor and glory in the achievements of the future." Impressive as may be the records of the accomplishments of our profession during the past years, we cannot rest upon them or feel that we have achieved our final goal. The advances made in the study of the biologic sciences are adding to the existing proof of the accuracy of the osteopathic concept and its principles. There is increasing evidence that greater accomplishments can be made through continued investigation and a more scientific application of the principles of osteopathy.

Advancement depends upon our ability to teach that which is already known and to investigate further the complexities of the form and function of the body through careful observations, continual research, and cooperative thinking. Thus it becomes the duty of our educational directors to insist upon the presentation of such subjects as are essential to osteopathic thinking—those that will enhance clearer impressions of the application of the physical principles and chemical reactions as they exist in the body under varying states of health and disease. This duty rests upon the general practitioner and the specialist as well as those directly connected with our teaching institutions.

Norris[5] has stated: "Presidents, deans, and other administrative officers are accessories to the fact of education, while the faculty are the true artisans of education." We hear much regarding academic freedom but it must not be emphasized at the expense of academic responsibilities. It must be balanced. The pursuit of truth is an academic responsibility which includes the willingness to state facts on matters of concern to the profession. The position of the teacher is, true enough, to teach, but it is also to encourage thinking, even at the risk of being misunderstood. Education is the process through which those who hold certain values transmit them to others who are ready, that is, capable and willing, to receive them.

Those who present themselves for instruction are the product of the committees on admission, whose responsibilities cannot be taken lightly. These committees must be able to function in complete freedom from political pressure and outside influence. The profession today is the product of the admissions committees of yesterday, just as surely as the profession of tomorrow will be the product of the admissions committees of today. The selection of the committee members must in itself be the result of a careful evaluation of the abilities and motivation of those who are to serve the profession in this important capacity.

Physicians are needed in ever-increasing numbers, yet the numbers admitted to our colleges must not be permitted to exceed the facilities at hand for adequate learning. Colleges are faced with the problem of the cost of education per student. When we stop to consider that the osteopathic colleges have not been tax supported and that the profession is relatively young, we must appreciate the fact that the burden has been borne by the profession and its friends. The economic expedience of large numbers must not supersede the educational merit of carefully controlled, limited enrollments based upon facilities, personnel, and the motivation and ability of the applicant.

The task of presenting osteopathy to the premedical student is important and relatively new. For many years large numbers undertook the study of osteopathy due to the help they or members of their families had received. Many who journeyed to Kirksville for therapy remained or returned as students. In those days the requirements for admission into the schools of the healing arts were not as high as they are today, but the accomplishments of those who graduated in osteopathy in that era went far toward nurturing the growth of a profession that has been raising its requirements for admission and increasing its educational opportunities ever since. Today the osteopathic requirements are generally as high as those demanded by the older school of medicine. Through the efforts of the Office of Education of the American Osteopathic Association, directors of vocational guidance and advisors in schools and colleges throughout the country are becoming familiar with the osteopathic profession and the opportunities it has to offer.

In Philadelphia this year an "Osteopathic Day," suggested, planned, sponsored, and directed by the students, welcomed over 150 students and faculty representatives of twenty-six undergraduate colleges. It served to familiarize them with osteopathy by permitting them to hear something of the osteopathic concept and principles as well as visiting the laboratories, clinic, and hospital. The continued participation of practicing physicians in directing to the colleges prospective students who show interest, have ability, and are properly motivated is a valuable means of aiding the profession. Literature that describes the requirements and the opportunities should be in the office of every physician.

Among premedical requirements is satisfactory completion of a course in physics. It would appear that the courses in physics and chemistry are designed more especially for students preparing for the fields of industrial chemistry and engineering rather than for the practice of the healing arts. While this is recognized by medical educators, it is of especial concern to our profession since our concept and principles utilize the operation of physical principles in the study of structure and function in the human body. I have too often recognized a tendency among many students to be weak in this phase of their earlier training and greater clarity of thought in those whose application of this science is of maximum service to them. An adequate understanding of these principles and the ability to comprehend their operation in the body is essential if the practice of osteopathy is to be as scientifically and artfully applied as possible.

Earlier I referred to the increasing demands that have been placed upon our colleges. These include those made by examining boards, the desire for greater privileges, the emphasis that is being placed upon specialty practice, the increasing number of osteopathic hospitals, and the increasing use of osteopathic physicians in industry. In order to meet these there has been a continual changing of the curriculum in the colleges. Curricular changes and adjustments are necessary but must be made with care, be justified, and uninfluenced by any feeling of inferiority. No change should be made that will narrow the influence, teaching, or approach to the study and treatment of disease from the principles that have been proved to be sound. Changes should be made by those whose understanding of and interest in the osteopathic concept and principles are not to be questioned. It is true that many who de-emphasize the scope of the application of osteopathic principles have themselves been victims of an inferiority complex. The profession does not need to be influenced or weakened by this type of thinking, nor does it need its assistance in order to acquire a cloak of dignity. I am speaking frankly but in accordance with that which I believe is in the best interests of a profession that has the most to offer yet one whose correct understanding and application is neither easy nor empirical. It has due regard for both science and theory.

I do not argue against the proper uses of any diagnostic or therapeutic modalities which are necessary and which are used in accordance with osteopathic principles. The existence of a necessity should determine their use. There is a dangerous tendency on the part of some to regard manipulative osteopathy as an adjunct. It is heard in the field and even from some lecture platforms. I have never known a school to exist because of an adjunct and yet, as I listen to some discussions and read some published papers, there is cause to question the comprehension of basic material as set forth by our concept. It is through manipulative procedures we find the best means for the expression of the osteopathic concept. When the use of other methods of therapy is necessary, it should be made with due regard for and in a manner compatible with the osteopathic concept. Then and only then is its use justified.

We hear much about the necessity for integrating the various subjects and of the necessity for stressing this integration in respect to basic sciences and clinical subjects. This is a must. But, taking first things first, let us look at a must in the field of education generally. It seems true that a good part of education, as it exists today, consists of the presentation of many facts without stimulating thought. The result is that there are many in possession of much information that they are unable or unwilling to use. The relation of one fact to another and the stimulation of the processes of thought should be constant characteristics of educational endeavors. It is felt by some that there is a tendency to educate a segment of society beyond its intelligence. This may be debated with both interest and value. Regarding the processes of thinking and of putting to use the facts presented in such a manner that they will be of service at the proper time will determine, to a large degree, the end product of our education. It is as true in osteopathic education as in other fields, and until it is realized by the mass it will limit the ability of physicians to give patients maximum care.

Dr. J. Parsons Schaeffer,[6] who, in my opinion, is the greatest living anatomist, once made the following statement in the course of an address during his term as president of the American Association of Anatomists:

> The patient is entitled to the best that science and art can bring at the time. Here is creative medicine, and the responsibilities of the basic science teacher are as those of the clinical teacher in preparing men and women for the immediate, urgent, and ever present duty.

The osteopathic concept and osteopathic principles are as basic in our profession as those subjects usually described as basic sciences generally. The interrelationship existing between them was stressed many times by Dr. Still, and it should be applied in a study of the production of symptoms and physical signs and in the administration of manipulative therapy.

Some important facts which have been overlooked regarding Dr. Still have a bearing upon the teaching of osteopathy. One was brought to my attention recently by Dr. George W. Northup when he asked me if I realized that we do not have a single book on technic written by the founder of osteopathy and that we have very little technic described by him. His emphasis was placed upon the concept and principles and upon the basic sciences which, if properly understood, would indicate the technic to be used. The teaching of technic is essential, but it should be explained from the standpoint of the part that is under consideration and that which is to be accomplished. The purpose, the method, and the reason should come first, and the details of the manual dexterity should follow. It is true that some of the clinical results obtained from manipulative therapy have not been adequately explained, just as the explanation of some physical signs requires investigation before the mechanism of their production will be understood. Thoughtful use is indicated, but their explanation requires study and research. The opportunity and even the ability to do the necessary research lies within the

province of a limited number, but systematic thought and regular study are necessary for each individual.

POSTGRADUATE EDUCATION

Many states require for reregistration certification of attendance at educational meetings or conventions or participation in postgraduate courses. Postgraduate courses presented by the colleges and affiliated organizations are growing in popularity. Such educational opportunities strengthen the profession by affording its members a means of reviewing material for which a need exists and for receiving instruction in that which is new.

Not only are courses offered for those seeking certification in a particular field but for the physician engaged in general practice. The colleges are anxious to learn the wishes of the individual members of the profession in this respect and to be informed of any existing need so that consideration can be given to the needs of all who seek to advance their knowledge. The colleges are now in a position to make possible postgraduate education at a level hitherto impossible because of expanding facilities, increased personnel, and organized administrations. Still in its comparative infancy, postgraduate education will influence the future as it is influencing the present. It is another part of an expanding program.

Were I not to mention the numerous local study groups I would be omitting recognition of the efforts of many to advance service through more adequate knowledge and understanding. The value of these groups to the profession resists evaluation, but they too reflect the sincerity of purpose and an ever-present desire to progress.

RESEARCH

An expanding research program is not only within the planning for the future but is in operation today. Coordinated and cooperative efforts of clinicians and research workers requires that, insofar as possible, the problems of one be comprehended by the other. The difficulty with which many clinical results can be explained to the satisfaction of the scientist is liable to result in a state of confusion and even misunderstanding.

When dealing with so complicated a biologic unit as man, the research worker is immediately faced with difficulties peculiar to this field alone. Controls are not easily obtained. The ever-changing physical being upon whom a complexity of internal and external forces are in continual operation presents problems difficult of solution, causing one to wonder about the limitations of science. Much of value may be disregarded or set aside unless these facts are kept continually in mind. Man is not an object to be fitted into a form. His type, reaction, and intensity of reaction varies with the individual and even within the same individual at different times and under varying circumstances. Although these circumstances complicate the study of man, they make his study the more interesting—it is a challenge.

Since peculiarities of structure and function resist the demands of laboratory controls, the truth of much that has been observed has been discredited. Man still remains a biologic unit functioning in accordance with the laws of nature, influenced by the wisdom of a Creator whose important part is too often overlooked. To do so destroys the balance of thought so helpful to the dictates of a scientific mind or, indeed, of any mind. These statements should not be interpreted as suggesting futility or limitations but should serve to indicate the necessity for the realization of the problems that complicate the study of the highest form in our biologic classification.

Those responsible for the operation of laboratories, especially anatomy, physiology, and pathology laboratories, must study the normal and the abnormal structure and function of the body. Equipped with an understanding of the osteopathic concept and principles, the osteopathic researchist's approach to the study of health and disease is distinctive. The realization of these opportunities and their significance has suggested to me much that waits to be done which, when accomplished, will extend our horizon beyond its present limitations.

I mention anatomy laboratories because it is in this field that I have devoted more time. The clinical application of anatomy had much to do with the founding and development of the profession. Those connected with this basic science must avail themselves of every means at hand to study the details of structure, correlating that which is known with that which is to be learned through the use of newer methods and adequate equipment.

The possibilities for better study through the use of the Halladay method of preparation is not restricted to the study of the osseous and ligamentous structures as has been the common belief. Through its use and continual investigation a method is envisioned by which a greater number of the body tissues can be understood. The clinical application becomes increasingly apparent as the method is used. The method makes possible a type of tissue preservation which permits observation of tissues of more lifelike consistency and texture and appreciation of details of change in the relationship of parts in motion. This study is a part of the program being carried out by the Bureau of Research.

The studies being done by the Department of Physiology at Kirksville have been productive of a better understanding of the visceral and somatic response to structural deviation. They have given additional evidence to the accuracy of the statements of some of our earlier clinical workers who, of necessity, theorized much. They have opened up new avenues of thought, altered some impressions previously held, and are contributing to an expanding philosophy. Theory is essential and just, a part of each school of thought, but to theorize much and investigate little limit progress.

The Bureau of Research is a division of the Department of Professional Affairs of the American Osteopathic Association. Through its efforts the research programs are experiencing a healthy growth and in some instances have received Federal aid. Through the years the profession has carried out numerous research programs and the review of the literature on this subject reveals a continued, constant effort to learn more regarding cause and effect. The untiring efforts of Dr. Louisa Burns, dean of osteopathic research, stand out as a shining example of devotion to the profession through research.

HOSPITALS

The profession is now in a position to offer internships to all students graduating from our colleges. Such an opportunity indicates the great strides that have been made in expanding the osteopathic hospital program. The number of beds in pre-existing hospitals has been increased and the establishment of new institutions has further increased the bed capacity. Not all registered hospitals are approved for intern training but they are

all making a contribution to the advancement of the profession and to the welfare of the communities which they serve.

The more detailed presentation of the work being done by our several bureaus and their subdivisions occupies a place on this program. The better we are informed regarding the scope of their work, the greater will be our ability to appreciate the strides that have been made until, at mid-century, we find a profession built and growing on service—a profession which holds within its own power the ability to look forward to a greater tomorrow.

FUTURE

Re-examination of the purpose of the osteopathic profession and a review of its accomplishments through the troubled years of wars and depression give evidences of a profession founded and growing on service to mankind. As mentioned above, the ability to maintain a healthy and intelligent growth rests entirely with its members. When considering the future, I am more concerned about the dangers existing from within than those from without the profession. The possibilities for an expanding philosophy leading to greater accomplishments are so vast and so encompassing in the field so distinctly ours that their study and practice should be our primary concern. There is then no room for a feeling of professional insecurity or for questioning our professional integrity.

That which makes us different places us in a unique position to offer much in the field of preventive medicine. The prevention of many of the complications and sequelae that characterize many diseases is familiar to all of us who have seen cases under osteopathic management. It is a subject that can be developed further and that should be stressed in all of our teaching in both medical and surgical fields.

The study of the growth of the body and the early detection of abnormal development constitute an important subdivision of preventive medicine. Lying within the scope of osteopathy, this relatively unexplored field, as it develops, will permit the detection of deviations from the normal in the very young. The dangerous expression "wait" will not be heard so frequently when retardation is present or suspected, and the overly free use of such expressions as "of no clinical significance" will give place to more careful study and consideration. Many unrecognized deviations lay the groundwork for or permit the establishment of a pattern that results in disturbed function of later years.

During the formative years, when the biologic plasticity of growing parts renders them especially vulnerable, many unfortunate changes take place. There is growing clinical evidence that many disturbances of growth can be normalized when proper treatment is administered. In other instances where complete normalization is impossible, improvement sufficient to result in a reduction of the disability may be the reward. Here, too, there is an opportunity to consider the handicapped child and the physician trained to manage these cases. Detailed study of the tissue of growing parts requires hours of work and the ability to understand the differences that exist in the architecture of the body during the various periods of life.

At the opposite end of life's span the degenerative diseases are frequently a feature. They exist in varying degrees of severity and often reflect the degree or type of stress and strain experienced during earlier years. The problem is one primarily of health, yet it includes society and economics. It concerns not only the individual but his family and the community of which he is a part. Cure is, for the most part, out of the question so that palliative therapy assumes the place of importance. To make life easier by reducing the violence and the progress of the destructive process is to render a valuable service to the patient and those associated with him. Here the osteopathic concept carried out by the intelligent application of its principles can do much toward relieving the strain upon the faltering homeostatic mechanism of the body.

At mid-century the osteopathic profession can look forward toward greater accomplishments provided it appreciates the fact that it is a sector of medicine with major potentialities. A school based upon reason and not upon rule has within its grasp a future that is assured. It must be willing to accept the challenge as envisioned by its founder and, in its thinking, be able to follow the pattern of his well-ordered mind.

48th and Spruce Sts.

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THE BASIC UNITY OF PRIVATE PRACTICE AND PUBLIC HEALTH

Practicing physicians who emphasize the curative aspects of medicine in their work with individual patients and families, as well as physicians on the public health team, sometimes lose sight of their common goals in the heat of discussions about which group shall be responsible for some particular job that needs doing. It is useful to recall that diseases and other disorders of health with which both private practitioners and public health workers deal have a biological basis as they occur in "Nature." When not influenced by man's control measures, they go through the stages of a more or less typical natural history which involves the interaction of the human host, the agent directly responsible for the disease or disorder and the environment in which both host and agent meet. . . .

The biological nature of disease itself can be the unifying factor of greatest importance, giving real significance and a common purpose to the manifold efforts man makes to deal with his common enemy, disease.

Disease does not appear out of the blue without "warning," but is a dynamic biological process which results when there is a shift in the delicate balance in the interaction between host, agent, and environment. This shift may be due to lower resistance of the host, increased virulence of the agent, some important change in the environment, such as a flood or other disaster, or other almost infinite changes and combinations of change. Hugh R. Leavell, M.D.—*American Journal of Public Health*, December, 1953.

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Cephalopelvimetry by Direct Film Measurement*

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A universally accepted technic for cephalopelvimetry by roentgen methods is still to be found. This is attested by reports of "new," "simplified," or "modified" procedures appearing constantly in the literature. There is no one generally approved or standardized system. The causes for such diversity are more complex than the mere inherent failure of a given procedure to produce accurate measurements. The volume of a given x-ray department may well govern the choice, as certain methods demand expensive and elaborate equipment which would be impractical where the numbers of such examinations are low. Other technics require a great deal of time and care, owing to the exacting and detailed positioning, which in a very active general department could not be given. Therefore, it seems highly improbable that a single technic will ever satisfy the needs of all workers in the field. If, however, a procedure can be developed which will fulfill the requirements of a majority, a long step toward standardization will have been achieved.

It is my purpose to review the problem and offer for consideration still another modification which I feel has definite merit because of its simplicity, accuracy, and margin of safety. It is my belief that this method has many of the attributes necessary for general acceptance.

The dilemma of cephalopelvimetry is distortion. Measurements taken from film must be corrected in order to arrive at a truer picture of the pelvic and fetal size. A basic equation exists, describing x-ray distortion, which will be further elaborated in the succeeding discussion.

Of the myriad of procedures in use it will be seen that all fall into three or four major groups. Hodges and Dippel[1] have submitted the following classification which will be reproduced in its entirety.

I. Position Methods
- A. Isometric scales
- B. Proportional scales
- C. Triangular proportion
  1. Direct application of equations
  2. Graphs of equations
  3. Slide rules

II. Parallax Methods
- A. Stereoscopic
  1. Direct parallax
  2. Measurement of virtual image
  3. Geometric construction
     - a. Plane
     - b. Solid
- B. Non-stereoscopic
  1. Single film
  2. Multiple film
     - a. Cartesian co-ordinates

III. 90-Degree triangulation
- A. Empirical
- B. Geometric construction
  1. Plane
  2. Cartesian co-ordinates

IV. Orthometric reproduction
- A. Pantographic
- B. Orthoscopic
- C. Geometric

This outline was reproduced to detail more vividly the diversity in approach to the problem. It would be well beyond the scope of this presentation to discuss each of the procedures mentioned above; it will suffice to discuss briefly some of the more commonly used technics.

The positional methods enjoy wide popularity. Their basic principle consists of correcting the distance distortion of the object to be measured. There is wide variation in method among the proponents of this procedure and the weight they give to the component parts of the whole. Thoms[2] is one of the champions of this type of pelvimetry. A specialized table or pad is necessary to place the patient accurately in a semisitting position so that the central ray passes through the plane of the inlet, in the anteroposterior view. A lead grid or plate, divided into centimeter squares, is then superimposed over the original film which is re-exposed. It is reasoned that since the distortion will be the same in both cases, measurements can be read directly from the film.

The criticisms of this method are many. Bone detail is poor owing to the superimposed gravid uterus in the semisitting position unless excessive exposure is given. The positioning is almost impossible if the patient is in active labor. Then, too, exact placement of the patient is essential because if the inlet is not exactly parallel to the plate, foreshortening occurs with resultant errors in measurement. The last major complaint is that the films are of little value for the mid pelvis and low pelvis.[3,4]

Other proponents of the positional methods are Snow and Lewis.[5] The philosophy in their procedure is based on the construction of similar triangles whose bases will then be proportionate to their altitudes. Films are exposed in anteroposterior and lateral projections, and an average correction factor is applied, depending on pelvic size. A specially prepared slide rule is used to facilitate computations. The authors claim that the advantages of this procedure are that it is simple, only standard equipment is necessary, interpretation employs linear distances which are more meaningful to the obstetrician, and accuracy is within 0.5 cm. of the true values.

This technic has proved to be less simple and less rapid than its proponents claim. The landmarks selected are not always easily visualized, and, consequently, varying results are frequently obtained in the same group of films when analyzed by different interpreters. Also, the procedure is tedious and time consuming. An average of fifteen measurements is necessary on the films and twelve operations on the slide rule. An accurate interpretation of wet films is quite difficult.

Before concluding the discussion of the positional methods, it is necessary to mention briefly the notched centimeter ruler and the various false centimeter scales.

A notched centimeter ruler is placed between the patient's thighs parallel to the film and at the same height above the table as the anteroposterior diameter on the lateral pelvic view. Measurements are then plotted directly from the projected centimeter scale.[6]

*This paper was prepared during a residency at Art Centre Hospital, Detroit.

False centimeter scales are obtained by photographing test objects at distances of 1 to 30 cm. and noting the distortion. The size of a given image is obtained by reading from the chart at the height of the given part from the film. Various means of measurement have been proposed, including rubber bands upon which a centimeter scale has been marked, metal balls to be placed in the rectum both as a landmark and measurement of distortion, table of reduction factors whereby measurements are transposed by adding or multiplying by fixed factors.[7-13]

In all of these methods the accuracy is open to question. Dependence is placed on a midline position of the fetal skull and an anteroposterior correction cannot be made. Also, these procedures frequently prove embarrassing to the patient since they entail fixation of the ruler, more often than not, by a technician rather than physician.

The parallax method finds, as does the positional school, support from many enthusiasts, but again there is little uniformity of approach. When stereoscopy is employed, specialized equipment is frequently essential in the form of precision stereoscopes or stereoroentgenometers.

One procedure utilizes the triangulation principle, similar to the one used in localization of a foreign body.[3] The tube-to-film distance and the tube-shift distance are known. The points selected as landmarks of the pelvic diameters are picked out stereoscopically, and holes are punched at these sites. The films are then transposed to a stereoroentgenometer and measured. This technic is highly specialized and difficult until the requisite skills are mastered.

Another procedure requires anteroposterior stereoroentgenograms, a lateral view in which the gluteal marker is affixed, and a view of the subpubic arch and symphysis.[14,15] A special stereoscope is required because, while the films are being viewed, cardboard circles of varying diameters are fitted through the plane of the inlet in order to arrive at estimations of size. A circle that will best fit the fetal skull is also applied. The pelvic and head circles are then compared. Obviously this technic necessitates an expert and highly specialized interpreter for the viewing and measuring, and, also, the fetal head size is not always obtainable because of motion during the relatively prolonged time required for the stereoroentgenograms.

A nonstereoscopic approach is offered by Isaacs.[16] The principle of divergent distortion is employed. Essentially this implies that magnification of an object varies according to its distance from the film. Therefore, two anteroposterior exposures are made, one at 25 inches and one at 40 inches. A mathematic relationship exists between the size of the distorted images and their true size. A nomogram for this equation is supplied and measurements of inlet and midplane can be made. No measurements of the lateral pelvis or skull are obtained.

The best known technic utilizing 90-degree triangulation is that of R. P. Ball.[17] Measurements of the pelvis are usually made by the Snow-Lewis method[5] previously described or any other customary technic. The size of the fetal skull, however, is arrived at on a volumetric basis. The perimeter of the bony vault is determined and a nomogram employed to convert this to a volume, in cubic centimeters, with a correction for the estimated thickness of the scalp. All volumetric calculations assume that the fetal skull describes a sphere, which is not always the case and, when it is not, the resulting figures are inaccurate. This method has also been criticized by many obstetricians because of their unfamiliarity with volumetric concepts.

Orthometric reproduction is the last major category listed in the above outline. Hodges and Nichols,[18] in an illuminating article, discuss their approach to orthographic pelvimetry. They utilize a special piece of apparatus in which 90-degree exposures can be made without movement of the patient. The resultant films are then processed with a linkage pantograph. An orthographic tracing is made with a reduction in size of the tracing to correct for divergent distortion. Thus true dimensional tracings of the frontal and lateral views of the pelvis are produced from which measurements necessary for obstetric purposes can be had without computation or specially calibrated rulers. The only source of errors is in the incorrect identification of landmarks. Because of the extensive equipment required this technic is not suited to the ordinary x-ray department.

Procedures have been described in which fluoroscopic tracings are utilized.[8] The patient and the screen are fixed, and only the tube is moved. This, it is contended, results in little distortion. Measurements are then made from the tracings. No figures are given of the radiation exposure to the fetus or mother during such examinations.

Teleroentgenography, frequently classified in the orthometric group, has been attempted sporadically. This procedure is predicated on the basic formula for distortion which is: $\frac{O}{I} = \frac{H - h}{H}$ where O equals the object size, I equals the image size, H equals the target-to-film distance, and h equals the object-to-film distance. Simply, this formula states that as the target-to-film distance is increased the size of the image becomes closer to the size of the object, or, the greater the distance the smaller the distortion. Logically, a point can be reached where distortion disappears or is negligible. Dippel and Delfs,[19] in discussing this approach to pelvimetry, concluded that films taken at 6-foot distances would result in overestimation of size by approximately 10 per cent.

This very basic method has never gained popularity because available equipment could not make exposures at the distances required in order to reduce distortion significantly. With the advent of newer apparatus this approach is again being investigated.

Germann,[20] in reviewing the problem, concluded that if two basic assumptions could be validated, namely that a 5 per cent error was insignificant and that the object-film distance rarely exceeded 20 cm., then films made at 476 cm. could be used with direct film measurements. This figure was obtained by utilizing the above discussed equation for distortion. Since the average diagnostic equipment cannot produce satisfactory films at such a distance, a therapy unit was employed. Again, since the average therapy room is not the necessary 14 feet in length, the tube was pointed out the door, the patient placed at the proper distance down the hall, and the film exposed. Diagnostic films were obtained.

The following factors were used: for the anteroposterior view, 180 kv., 20 Ma., 5 seconds; and for the lateral view, 180 kv., 20 Ma., and 15 seconds. The author felt that there were certain disadvantages to the technic, primarily those inherent in the approach. It would be difficult and cumbersome to use a therapy

machine for routine diagnostic procedures, even if such a unit were available. Space is required. Then, too, while the films were diagnostic, their quality was not equal to those produced in the conventional manner.[20]

It was on the basis of the above work that we began our experiments at Art Centre Hospital. The possibility of direct film measurements was appealing because of its simplicity and speed. Although the requisite therapy unit was available in the department, two factors eliminated it from consideration. The most important, and this probably exists in many installations, was that because of safety measures it was impossible to rotate the tube head so that it could be pointed out of the room. The second, assuming that the tube head could be rotated, was the impossibility of subjecting patients to examination in the hallway of an active department.

The possibility of teleroentgenography with a diagnostic unit was then investigated. Our machines were the 200 Ma., 100 kv. rotating anode variety found in most average departments. By consulting the tube-rating charts it was discovered that 100 Ma. could be delivered at 100 kv. for 5 seconds. It was discovered that 8 feet was the maximum distance at which films of good diagnostic quality could be produced. It was decided that both conventional and 8-foot pelvimetry would be performed on a number of patients, and the results would then be compared for mathematic correlation and clinical accuracy.

In order to evaluate the findings certain assumptions were required. It was necessary to assume that the method which heretofore had been used in our department and which had proved satisfactory was totally accurate and to compare all the data obtained from the new technic with this standard. It was also decided that I would measure all films in order to insure uniformity of operation and that both sets of films were to be measured from identical landmarks.

It would be well at this point to detail the procedure used, both in obtaining the films and in their measurement.

The routine procedure used in the department prior to the present work was a modified Snow-Lewis technic, with the patient supine and a tube-to-film distance of 36 inches. The most important point of departure from the Snow-Lewis method was the posterior landmark used to obtain the conjugata vera or diameter of the anteroposterior plane of the inlet. Instead of using the undersurface of the pubis to the sacral promontory for this diameter, we utilized the point which is at the convergence of the ileopectineal lines. Thoms,[2] in analyzing 200 primiparas, found that there was much variation in the line from the sacral promontory to the bony pelvic canal and suggested abandoning this landmark in favor of the convergence of the ileopectineal lines. Another variation was in the selection of the correction factor for the true conjugate in the lateral film. Instead of drawing this from the sacral promontory to the constructed skin line, we preferred to use a point two thirds of the distance posterior to the symphysis along the line of the obstetric conjugate. It was felt that this gives a more accurate determination of the plane of the birth canal.

The technic employed in the 8-foot films is as follows: The patient is positioned against a chest holder in the standing position and a lateral exposure and an anteroposterior exposure are made. An 11 by 14 inch Lysholm grid cassette is used since the department does not have an upright Bucky. This size cassette has proved quite adequate for even the largest patient yet encountered. At this distance, the factors found after some trial and error to produce films of good quality and yet to stay well within tube limits were 100 kv., 100 Ma., and 2 or 3 seconds in the anteroposterior view and 100 kv., 100 Ma., and 5 seconds in the lateral projection.

In initially comparing the two sets of films it became evident that more information was obtained from the teleroentgen method simply on a basis of the upright position which the patient assumed. There was evidence of engagement in several of the 8-foot films when none was noted in the conventional.

Additional arguments for the erect posture in pelvimetry have been offered by March,[6] Ball and Golden,[21] and Crews, Hampton and Moore.[22] Besides engagement of the skull because of gravitational forces, if the head is displaced by masses within the pelvis this will be evident. In the anteroposterior film the cranium will be seen descended to the level of the ischial spines or well into the inlet. When this level is not reached, it is evidence of soft tissue interposition or bony abnormalities. In the lateral view, if the head is not through the inlet or is displaced a distance equal to one third of the diameter of the skull in either direction, the same conclusions can be drawn. Crews, Hampton, and Moore[22] question the necessity of inlet measurements with this technic. The disadvantages of having the patient stand for the procedure are possible bleeding or exhaustion, increased exposure required, and loss of detail and contrast of fetal parts.

It is our opinion that the advantages far exceeded the disadvantages, and after the first fourteen patients, all were examined in the erect posture. It was also decided to increase the tube-to-film distance to 40 inches.

Fifty-six additional patients were studied in this manner, a total of 70. The comparative measurements are given in Table I.

TABLE I—COMPARATIVE MEASUREMENTS OF 70 CASES

Case	Skull	Inlet	Midplane	Outlet
1.	*a. 10.2	12.9	12.0	10.1
	†b. 10.9	13.9	12.6	10.6
2.	a. 9.9	12.9	11.7	9.9
	b. 10.5	13.2	12.1	8.9
3.	a. 9.9	12.2	11.8	9.5
	b. 10.4	13.4	12.7	11.5
4.	a. 9.2	13.2	12.1	8.3
	b. 9.9	13.9	13.1	9.2
5.	a. 10.0	13.2	12.2	9.7
	b. 9.9	14.5	12.1	8.9
6.	a. 9.8	13.6	12.4	11.0
	b. 10.3	14.0	12.1	10.5
7.	a. 10.7	12.9	12.0	9.4
	b. 10.6	13.9	11.3	12.2
8.	a. 10.2	12.1	11.5	8.8
	b. 10.7	13.0	12.6	10.0
9.	a. 10.5	13.8	11.8	9.4
	b. 11.3	13.9	13.1	9.6

*The measurements designated "a" were made using modified Snow-Lewis pelvimetry. In cases 1-14 the patient was supine and the tube-to-film distance 36 inches; in cases 15-70 the patient was erect and the distance 40 inches.

†The measurements designated "b" were made using 8-foot pelvimetry.

TABLE I *(Continued)*

Case	Skull	Inlet	Midplane	Outlet
10.	a. 10.6	12.8	11.6	9.2
	b. 11.3	14.0	12.2	9.3
11.	a. 10.2	12.5	11.8	9.7
	b. 10.7	13.8	12.8	10.2
12.	a. 9.5	13.2	12.1	10.0
	b. 10.1	13.7	12.9	10.4
13.	a. 9.1	13.5	11.6	9.0
	b. 10.2	14.5	12.6	9.4
14.	a. 9.2	11.2	11.5	8.4
	b. 9.5	12.6	12.1	9.2
15.	a. 9.2	11.2	11.5	8.4
	b. 9.5	12.6	12.1	9.4
16.	a. 9.4	13.7	12.8	9.9
	b. 9.8	14.5	13.5	10.5
17.	a. 10.2	13.2	12.4	10.6
	b. 11.0	13.6	12.6	11.0
18.	a. 9.9	13.2	12.6	10.0
	b. 10.5	13.5	14.4	9.6
19.	a. 9.5	12.2	11.8	10.1
	b. 10.2	13.6	12.9	11.0
20.	a. 9.2	Breech presentation: only skull views for comparison because of exposure factors.		
	b. 10.6			
21.	a. 10.9	12.4	11.6	8.7
	b. 11.0	12.9	11.6	9.1
22.	a. 10.1	13.1	11.7	10.1
	b. 10.7	13.7	12.3	10.9
23.	a. 9.4	12.0	10.9	9.1
	b. 9.7	12.6	11.3	9.3
24.	a. 9.7	12.9	12.8	10.8
	b. 10.2	13.1	12.9	11.6
25.	a. 9.5	14.3	12.4	9.6
	b. 10.3	14.8	12.9	9.8
26.	a. 10.3	12.8	12.6	11.4
	b. 11.1	13.5	12.9	11.6
27.	a. 10.0	13.1	12.4	9.5
	b. 11.2	14.5	13.3	10.4
28.	a. 10.3	12.8	12.4	10.1
	b. 10.6	13.5	12.6	10.1
29.	a. 9.9	11.9	11.4	10.4
	b. 10.6	12.4	11.8	10.3
30.	a. 10.1	12.7	11.5	10.4
	b. 10.5	13.2	11.6	10.4
31.	a. 9.4	12.7	11.1	8.7
	b. 9.7	14.3	11.3	8.8
32.	a. 10.1	12.7	11.8	10.3
	b. 10.5	13.3	12.4	10.4
33.	a. 10.0	12.7	10.7	9.1
	b. 10.4	13.5	11.1	9.5

TABLE I *(Continued)*

Case	Skull	Inlet	Midplane	Outlet
34.	a. 9.6	12.4	11.1	9.4
	b. 10.2	13.2	11.6	9.6
35.	a. 9.4	12.8	11.6	8.9
	b. 11.0	13.5	12.0	9.7
36.	a. 10.0	13.3	12.2	11.1
	b. 10.8	14.0	12.9	11.5
37.	a. 10.4	13.6	13.0	10.5
	b. 10.7	14.2	13.3	10.6
38.	a. 9.6	11.9	11.3	9.3
	b. 10.1	12.1	11.4	9.6
39.	a. 9.9	12.9	12.3	10.4
	b. 10.7	12.9	12.6	10.6
40.	a. 10.3	13.0	11.7	10.6
	b. 10.7	13.5	12.0	11.0
41.	a. 10.3	12.7	12.0	9.3
	b. 10.5	13.4	12.5	9.3
42.	a. 9.2	13.7	13.0	10.2
	b. 10.2	14.3	13.2	10.6
43.	a. 10.2	12.3	11.6	10.1
	b. 10.8	13.0	11.8	10.3
44.	a. 9.8	12.7	12.7	10.5
	b. 10.7	13.6	13.0	11.2
45.	a. 9.6	12.6	12.2	10.3
	b. 9.8	13.4	12.6	10.6
46.	a. 9.8	13.6	11.7	10.2
	b. 10.4	14.4	12.9	10.7
47.	a. 9.8	12.4	12.2	10.2
	b. 10.3	13.2	12.5	10.7
48.	a. 10.4	12.1	11.5	10.2
	b. 11.0	12.9	12.2	10.6
49.	a. 9.3	11.9	10.9	8.7
	b. 10.3	12.5	11.9	9.0
50.	a. 10.0	12.8	12.2	10.2
	b. 10.8	13.4	12.4	10.7
51.	a. 9.2	13.7	13.0	11.5
	b. 10.3	14.1	13.8	12.0
52.	a. 9.7	14.1	11.8	9.9
	b. 10.8	14.2	12.0	9.9
53.	a. 10.2	13.9	12.5	11.5
	b. 11.1	14.1	12.7	11.5
54.	a. 10.2	12.1	11.4	9.3
	b. 10.8	13.5	11.7	9.8
55.	a. 9.7	12.5	11.5	9.7
	b. 10.0	12.8	11.7	10.4
56.	a. 10.3	13.4	12.4	10.9
	b. 10.5	14.1	12.8	11.0
57.	a. 8.2	13.5	11.9	10.2
	b. 8.8	14.0	12.2	10.8

TABLE I *(Continued)*

Case	Skull	Inlet	Midplane	Outlet
58.	a. 9.9	12.8	11.7	9.8
	b. 10.7	13.3	12.4	10.2
59.	a. 10.3	12.8	11.5	9.5
	b. 10.6	13.2	11.8	10.1
60.	a. 9.5	14.0	12.0	10.0
	b. 9.5	14.0	12.0	10.3
61.	a. 10.3	12.9	11.8	9.4
	b. 10.7	14.1	12.5	9.7
62.	a. 10.3	13.4	13.7	10.5
	b. 10.8	14.1	14.1	11.3
63.	a. 10.8	14.6	12.6	9.6
	b. 11.4	15.0	13.3	9.8
64.	a. 10.0	12.3	11.1	8.4
	b. 10.4	12.6	11.4	9.3
65.	a. 9.5	13.2	12.9	10.3
	b. 10.2	13.7	13.0	10.5
66.	a. 9.6	13.4	13.6	10.6
	b. 10.7	14.2	14.5	12.3
67.	a. 10.4	12.9	11.8	9.3
	b. 10.5	13.5	12.0	9.6
68.	a. 10.8	13.4	13.1	9.7
	b. 11.0	13.4	13.1	9.7
69.	a. 9.6	13.7	12.1	9.1
	b. 10.2	14.2	12.7	9.8
70.	a. 10.1	12.6	11.7	10.1
	b. 10.7	12.9	11.7	10.3

Table II lists the findings obtained from a dried pelvic specimen. Measurements taken directly from the skeleton with calipers were made independently by three experienced pelvimetrists. The figures presented under true dimensions represent an average of their findings. (Although discrepancies were slight, the fact that there was not complete accord with landmarks which could be adequately evaluated, we feel is highly significant.) These were compared with the measurements obtained from comparative films which had subsequently been made of the specimen. There were never more than minor discrepancies in the three sets of figures.

Figures 1a and 1b are reproductions of the 36-inch supine films in anteroposterior and lateral positions,

TABLE II—COMPARATIVE MEASUREMENTS OF A DRIED PELVIC SPECIMEN

Diameter	True	Snow-Lewis	8 Feet
Anteroposterior			
Inlet	12.4	12.5	13.0
Midplane	9.6	9.7	9.8
Outlet	7.8	9.6	9.9
Lateral			
Inlet	11.3	11.4	11.7
Midplane	11.8	12.4	12.6
Outlet	7.6	6.0	5.9
Average			
Inlet	11.9	12.0	12.3
Midplane	10.7	11.0	11.2
Outlet	7.7	7.8	7.9

and 1c and 1d are 8-foot films of the same patient in the erect position. Figures 2a and 2b are 40-inch erect films, and 2c and 2d are of the same patient at 8 feet. Figures 3a and 3b are the 40-inch films of the dried specimen; 3c and 3d are of the skeleton at 8 feet.

With the data collected it was necessary to decide how best to analyze the material. Rather than compare diameter against diameter it was felt that greater information could be obtained by contrasting the differences in measurements of the skull to inlet, skull to midplane, and skull to outlet against each other. This concurs with Dyer[23] who, after analyzing the measurements of 1,000 patients, concluded that cephalopelvic relationships are more important than straight pelvic measurements. This method was used to determine the efficiency of the teleroentgenographic technic in predicting the prognosis of a given problem using the findings of the conventional set as the absolute standard.

The statistical analysis revealed the following:

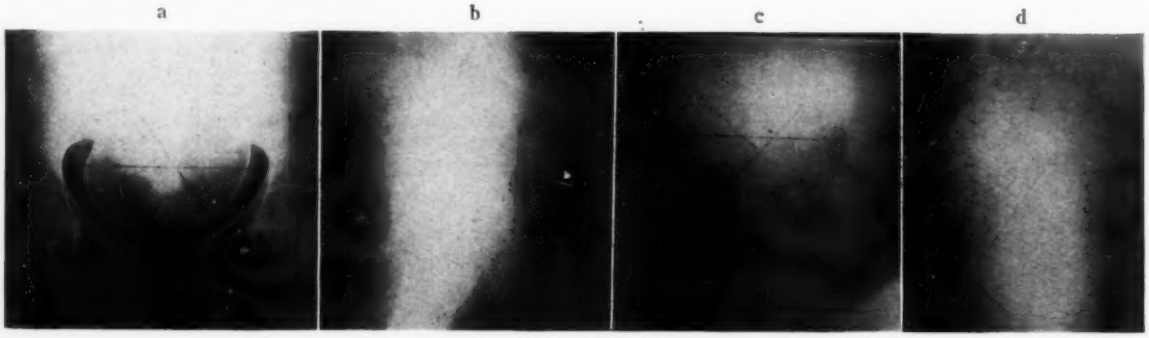
1. The inlet-minus-skull value obtained by 8-foot pelvimetry fell in 68 per cent of the cases within plus or minus 0.44 cm. of that same value obtained by the Snow technic; 95 per cent of the cases fell within plus or minus 0.88 cm. of the standard value.

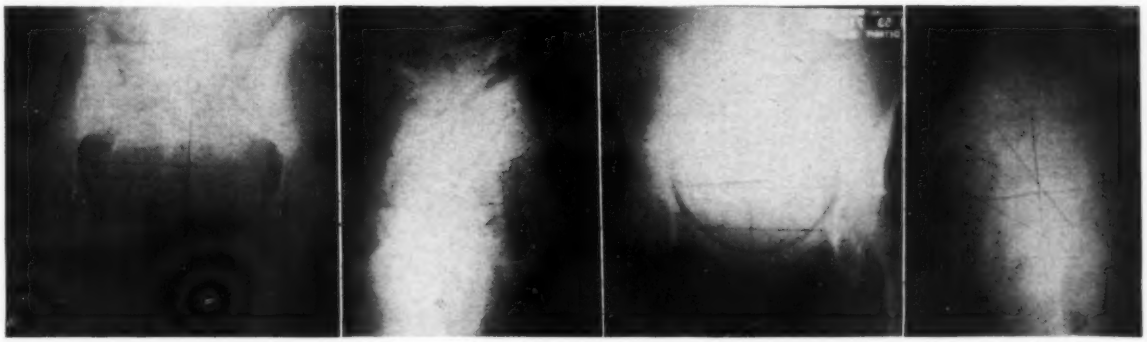
2. The midplane-minus-skull value from the teleroentgenograms in 68 per cent of the cases fell within plus or minus 0.37 cm. of the value obtained by the Snow technic, and in 95 per cent within plus or minus 0.74 cm.

3. The outlet-minus-skull value fell in 68 per cent of the cases within plus or minus 0.4 cm. of the standard, and within 0.8 cm. in 95 per cent of the cases.[24]

This seemed to be the most useful way to express the "accuracy" of the 8-foot data. However, it should also be kept in mind that it is quite possible that the results from teleroentgenograms would vary no more

Fig. 1. Figures 1a and 1b made at 36 inches with the patient supine, 1c and 1d at 8 feet with the patient upright. Note descent of skull into pelvis in the erect position.





a b c d

Fig. 2. Figures 2a and 2b made at 40 inches with the patient erect, 2c and 2d at 8 feet.

from the conventional measurements than one Snow measurements would vary in the same patient, when taken by two different pelvimetrists. Although it is beyond the scope of this presentation to explore the latter hypothesis, we had the opportunity of examining two patients twice in this series. They will be discussed in greater detail later.

The results revealed but slight variation between the two methods. Assuming the Snow figures to represent the true values more closely, it was necessary to decide whether the difference was significant enough to invalidate any clinical opinion rendered from the 8-foot films. This decision was made after culling the literature for opinions as to standards of accuracy and the various criteria for cephalopelvic disproportion.

Again it was found that there was no unanimity of thought. Evans[25] states that "errors up to and including 5 mm. are universally accepted." Germann[20] feels that a 5 per cent error is insignificant. Ball[17] has made the observation that for clinical purposes it is unnecessary to make any measurements in the majority of patients who are examined in the erect posture. The fetal head will be seen to be lying in the pelvis and direct visual observation will be sufficient to demonstrate disproportion. Swenson[26] said:

". . . anything border-line as far as disproportion is concerned must be evaluated on the basis of the known clinical situation, rather than in a difference of a millimetre measurement. Any method of pelvimetry which is reasonably accurate is, in our opinion, sufficient."

Ball and Golden[21] feel that pelvic mensuration should not be overemphasized. No arbitrary limits of safety in pelvic dimensions can be set because of the variables involved in the functions of childbirth such as uterine force, amount of molding, and availability of compensatory space.

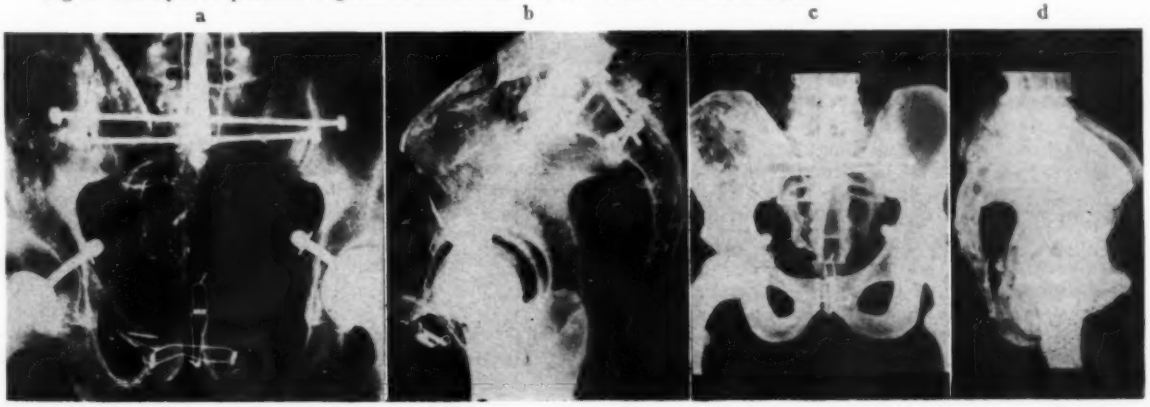
It was the consensus of most reporters that true disproportion is rare and when present is easily recognized by inspection. Many concede, however, that borderline disproportion requires more detailed information, and thus some form of pelvimetry is needed.[27-30]

Assimilating these viewpoints and translating them in terms of our work, we unequivocally concluded that 8-foot pelvimetry, with the patient in the erect posture, and utilizing uncorrected film measurements, is as satisfactory as the Snow-Lewis technic of pelvimetry. We also feel that for clinical purposes this method can be used without reservation.

The statistical analysis demonstrated that the variation between the comparative measurements fell within the range which most authorities agree is acceptable. All predictions made in the analysis were done with a plus or minus value. In all but six of the 560 measurements in this series, the values obtained from the teleroentgenograms were larger than those from the conventional technic. Of the six that were smaller, five occurred in the films made at 36 inches with the patient supine. Of the 448 measurements made after the erect posture was instituted in both technics, only one measurement of the 8-foot group was smaller and the difference was 1 mm. (Table I, Case No. 29, outlet comparison). This is mentioned for those who wish to predict from the 8-foot films what the values would be in the conventional procedure. It would be safe to subtract from the 8-foot findings in all cases. Also, if all 8-foot measurements are larger, the numerical differences in the two technics take on far less significance. The proportionate relationships between the

Fig. 3. Dried pelvic specimen. Figures 3a and 3b made at 40 inches, 3c and 3d at 8 feet.

a b c d



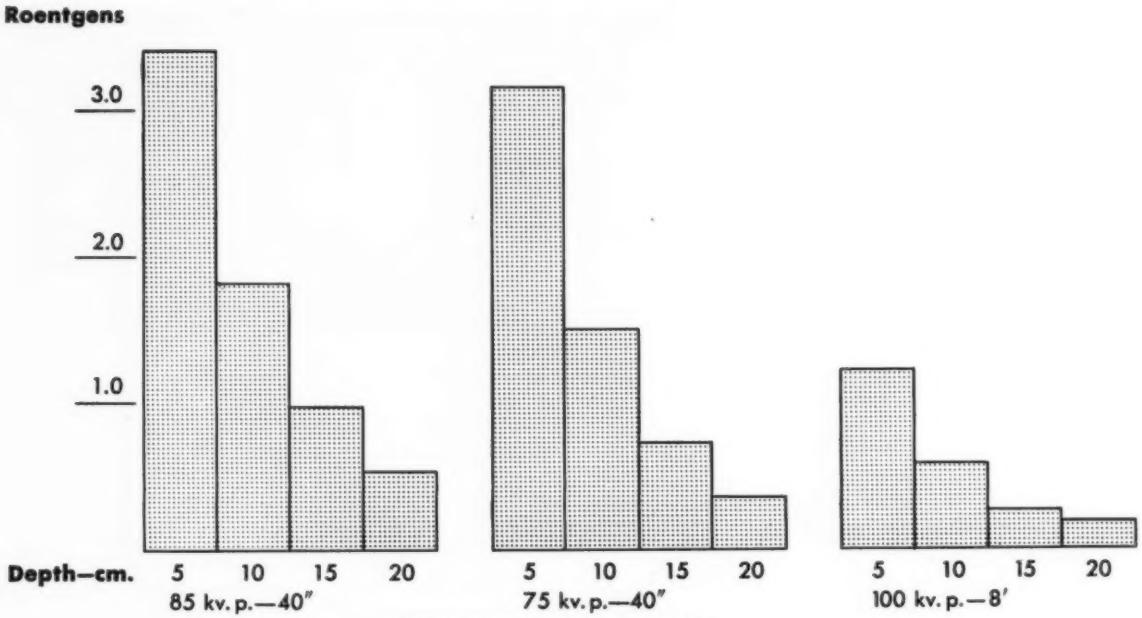


Fig. 4. Roentgens at depth vs. distance.

skull and the pelvic planes remain the same.

Case Nos. 35 and 67 and 23 and 64 are the two patients referred to above who were examined twice during pregnancy at intervals approximately 1 month apart. There was no conscious variation made in the normal routine of procuring the films or in their measurement at either time. Close scrutiny of the pelvic dimensions proved illuminating. A variation in fetal size was expected and was present. A variation, however, in pelvic size was not to be expected but was reported from the procedure of Snow and Lewis. The pelvic measurements on the 8-foot films were constant at both examinations, only the fetal size demonstrating change. In Nos. 23 and 64 there was a variation of 7 mm. in the outlet sizes measured by the Snow technic on 40-inch films while there was no difference in this measurement on teleroentgenograms taken at 8 feet.

This is not to imply that the conventional procedure is inaccurate. We believe, however, that because of the increased distortion at relatively short distances, any minor deviation, such as in positioning, angulation, or centering of the tube, will result in significant alterations in the final reading and, perhaps, interpretation. There appears to be more reliable reproducibility in the 8-foot technic. We appreciate that generalizations should not be made on the basis of these two cases, however, and merely report our limited experience as an interesting observation.

Another ramification of the study that lent itself to exploration was the relative amount of radiation to the fetus. It was assumed that despite the increase in energy required to produce diagnostic films at 8 feet, the increased distance would act to reduce the quantity of radiation to the part.

This hypothesis was tested. A rice phantom and Victoreen ionization chamber meter were utilized. Readings were taken at 5, 10, 15, and 20 cm. depths at both 40-inch and 8-foot tube-to-table distances. To facilitate the work only the depth and time were changed for a given kilovoltage. At 40 inches three average energies were selected on the basis of clinical experience with small, average, and large patients. These were 65, 75, and 85 kv.p. respectively. Two exposures were made at the same depth and kv.p. and the time was altered to correspond with that actually used for anteroposterior and lateral exposures. The results were added together and represented the total average exposure to the fetus.

The same procedure was followed for teleroentgen exposures, but only one range of kv.p. was determined since all of our clinical work was done at 100 kv.p.

All results appear on the graph in Figure 4 and in Table III. It will be sufficient for discussion to use one depth and analyze the results in detail through all the ranges of energy explored.

At 10 cm. and 40 inches it was found that 1.20 roentgens were absorbed at 65 kv.p., 1.54 roentgens at 75 kv.p., and 1.79 roentgens at 85 kv.p. At the same depth and 100 kv.p., with an 8-foot distance, only 0.562 roentgens were absorbed.

It was found that by roughly doubling the distance and increasing the kilovoltage and milliampere seconds the amount of radiation to the part was reduced approximately 67 per cent. Comparable results were obtained at the other depth.

The amount of permissible radiation to a fetus at or near term has never been definitely established. Cole[31] found that the total radiation absorbed by the uterus and ovaries is less than 10 roentgens. If this

TABLE III—ROENTGENS AT DEPTH VS. DISTANCE

	65 kv.p.—40 inches			
Depth—Cm.	5	10	15	20
Total—r.	2.81	1.20	.43	.20
	75 kv.p.—40 inches			
Depth—Cm.	5	10	15	20
Total—r.	3.14	1.54	.70	.35
	85 kv.p.—40 inches			
Depth—Cm.	5	10	15	20
Total—r.	3.39	1.79	.94	.48
	100 kv.p.—8 feet			
Depth—Cm.	5	10	15	20
Total—r.	1.18	.56	.26	.18

figure is accepted as the maximum permissible radiation, it will be seen that under normal operating conditions both technics are well within safety limits. However, it is almost needless to point out that the goal of all work with ionizing radiation is to reduce to an absolute minimum the quantity of exposure regardless of what the maximum acceptable limit may be. When the exposed part is embryonic tissue this aim assumes even greater importance.

CONCLUSION

To summarize briefly, we have developed a technic of pelvimetry which we believe to be as clinically acceptable as standard technics, providing a greater margin of safety to the fetus, and more simply and more quickly evaluated. Allen,[32] in his extensive discussions of pelvimetry, elaborated certain criteria which he deemed essential for the acceptability of a standardized technic in this field of work: (1) standardized apparatus, (2) simplicity, and (3) enough conciseness and objectivity to be accurate in the hands of an experienced radiologist.

We firmly believe that 8-foot cephalopelvimetry by direct film measurements more than fulfills these criteria.

Acknowledgment

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A PHYSICIAN'S DEBT TO MEDICINE

A physician's debt to medicine can never be repaid in full. From the obscure country practitioner to the most renowned surgeon at the great medical center, each has received more from this, the oldest and noblest of professions, than the longest life can repay. From those who have received much, much is expected. The debt of every physician to his profession is comparable to the debt he owes to his university, his parents, and, in a way, to his God. In each instance, he has been given much, willingly and freely, without binding or difficult demands for repayment. In each instance, he is duty-bound to repay, to the best of his ability, not primarily in the coin of the realm but in respect, honor, and a sense of appreciation. The greater the gifts he has received and the opportunities of developing them, the deeper is his indebtedness.

Each physician has traditionally begun his professional life by receiving a degree in medicine. His doctorate proclaims to the world that the physician is capable of intelligently practicing his profession and that he is worthy of the public confidence. As part of the degree conferring ceremony, he pledges himself to the oath of Hippocrates. Thus he has fulfilled the requirements, and the mythical door is opened to him in that he is privileged to study and treat the ills of mankind, real and imagined, great and small. He necessarily becomes a trusted confidant and, at times, as close to his patients as does the man of God. Such privilege, of course, demands great responsibility, and only those of great integrity can fulfill the requirements. A physician's primary responsibility is to his patient, to give the very best his training, ability, and judgment can offer toward meeting and solving each patient's problem, immediate or remote. There have been very few who have ever forgotten this primary principle or who have forgotten that all else must be secondary. For this reason alone, the profession has risen to and maintained its position as the most esteemed. We must see that it is never otherwise.—W. A. Barrett, M.D., *The Journal of the American Medical Association*, March 14, 1953.

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Therapeutic Oncology*

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INTRODUCTION

The management of tumors, especially of malignant ones, has changed in the past 10 years. Today, in addition to the surgeon, radiologist, and pathologist, the internist has become an important member of the "tumor team" of the hospital. There has been a steady improvement of the results in the treatment and in the survival rate of patients with malignant tumors in those cases in which the tumor team has evaluated each case from the clinical and histopathologic viewpoint. The best approach is then determined and applied as a cooperative team effort.

The recommended treatment for cancer in one locality may not be effective in another. This is due to the inherent skill and aptitude of the surgeon, radiologist, pathologist, or internist applying, directing, operating, or interpreting the management of the case. By this I mean that a poorly trained or unskilled oncologic surgeon should not compare himself to the very skilled and highly specialized oncologic surgeon. On the other hand, the radiologist cannot expect to obtain the same results in a poorly equipped radiologic department that he would in a very elaborate department. However, a skillful radiologist may offset the deficiencies of his department. There are other hospitals where the equipment is the best, but the radiologist is poorly trained, unskilled, or restricted by men who "can do everything themselves." The deficiencies of the surgeon and radiologist may be offset when these two work as a cooperative team. The pathologist must be able to give the proper histopathologic diagnosis, and the internist must be acquainted with the therapy for the disease. The internist must also advise the surgeon or radiologist of the patient's status and correct any deficiencies insofar as possible so that the treatment will produce the results expected.

If the attitude of the tumor team is one of cooperation, the results will be as good in a small hospital as they are in the large medical centers.

CLINICAL STAGING

Clinical staging is the evaluation of the cancer patient by means of the senses of touch, sight, and smell.[1]

Each area of the body may have a specific stage classification which has been accepted by custom or by international designation. In general, the following broad clinical staging of malignancy may be utilized. At times the clinical stage may have to be decided by the surgeon at the time of exploration, and this may serve as a guide in management.

Clinical Stage O.—The lesion is not palpable or visible but is found on biopsy—an occult type.

Clinical Stage I.—The tumor is confined to the organ or tissue involved with no invasion or extension. Lymph nodes do not appear to be involved. The mass is freely mobile.

Clinical Stage II.—The tumor extends into or invades the immediately adjacent tissues, lymphatics, and regional lymph nodes. There may be some fixation of the tumor.

Clinical Stage III.—The tumor extends into or invades the regional tissues with regional and distal lymph node enlargement and involvement. The lesion is adherent and may be ulcerated. The lymph nodes are enlarged and palpable.

Clinical Stage IV.—The tumor may show any of the previous characteristics and, in addition, distant osseous and visceral metastases.

Significance.—The significance of classifying tumors into clinical stages is that in stage 0 or stage I the results with good surgery alone are very favorable. In stage II, combined surgical and radiologic treatment will show excellent results. Clinical stages III and IV must be considered inoperable and treated by radiation alone or by combined radiologic and chemotherapeutic methods.

HISTOPATHOLOGIC GRADING

Evaluation of the tissue and cells of a tumor by a pathologist and determination of the ratio of the differentiated cells to the undifferentiated cells is known as histopathologic grading. This information may be obtained from tumor tissue after biopsy, aspiration biopsy, or smear examination. The report from the pathologist should include the type of tissue found, the degree of anaplasia, the amount of mitosis, the amount of connective tissue or stroma, and the presence or absence of metaplasia.

Histopathologic grading of tumors was formerly known as Broder's classification or grading.[2] It may be outlined as follows:

Grade I or Low Grade Malignancy.—The tumor section has little or no anaplastic cellular structure. Mitosis is present in very few of the cells if at all. There is no abnormal mitosis. The tissue is well differentiated and may be identified. It grows slowly as a rule. The stroma may be normal in amount.

Grade II or Low Intermediate Grade Malignancy.—The tumor section may show more than 25 per cent undifferentiation of cells and abnormal mitosis. Metaplasia may be present.

Grade III or High Intermediate Grade Malignancy.—The tumor in this grade shows more than 50 per cent undifferentiation of cells and abnormal mitosis. Metaplasia may be present.

Grade IV or High Grade Malignancy.—The tumor section usually shows more than 75 per cent undifferentiated, immature cells with a great amount of abnormal mitosis. Little or no stroma may be present. Metaplasia may be present.

Significance.—

Grade I and II tumors are usually considered more resistant to irradiation than the radiosensitive grades III and IV. As a rule, a grade I or II tumor will be curable by surgery alone provided the clinical stage is I. However, a histopathologic grade I tumor in a clinical stage III or IV is still inoperable and should be treated by irradiation alone or in combination with chemotherapeutic agents. If the histopathologic grade is III or IV and the clinical stage is I, surgery alone or with irradiation may show good results.

Clinical stage I and histopathologic grade I tumors are considered the most favorable to cure. Clinical

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stage IV and histopathologic grade IV tumors must be considered as the least favorable.

The type of treatment to be utilized in the management of a case may also be determined by the stage and grade of the disease. For example, stage I, grade I is best treated surgically, but stage IV, grade I is best treated by irradiation and chemotherapy. A lesion which is stage I and grade IV should be treated by surgery and irradiation.

Therefore, the histopathologic grading and the clinical staging of tumors may be considered as a measure of prognosis and a means to therapeutic approach.

DIAGNOSIS

It must be stated at this time that the diagnosis should be made before any intensive therapy is started. Diagnosis may be made from biopsy of the tumor, aspiration of the tumor, or a smear of the exfoliative cells or discharge. X-ray examinations, especially the newer methods of body section roentgenology, may show the first evidence of a tumor. The blood and bone marrow cytology must be considered before a malignant tumor is treated. Blood chemistry tests are very informative in constitutional disorders and in differential diagnosis, especially of bone tumors. The endoscopist still plays an important part in the diagnosis of esophageal, gastric, laryngeal, pharyngeal, and pulmonary tumors. Exploratory surgery should be performed more frequently and earlier in an attempt to find clinical stage I tumors. Today in some of the special institutions for the diagnosis of brain tumors and in the diagnosis of superficial tumors, radioactive isotopes have been very helpful in establishing an accurate diagnosis and determining the extent of the disease. This again emphasizes the value of cooperation among the various specialists not only in treatment but in establishing an early diagnosis by the proper approach.

THERAPEUTIC APPROACH

Since I am not a surgeon I will not discuss the surgical approach to tumors, but will merely mention that "second-look surgery" is becoming an accepted practice in the management of cancer.

Chemotherapeutic agents and steroids have not resulted in any remarkable cures but have been useful in the management of terminal and metastatic cases.[3,4] Some of these agents are the nitrogen mustard group, Aminopterin, Teropterin, TEPA and other folic acid antagonists, urethane stilbamidine, androgens, estrogens, nonvirilizing steroids, ACTH, cortisone, ACS (antireticular cytotoxic serum), bacterial filtrates (Coley's toxin: Bornes and Shear's filtrate: KRS cruzinendotoxins) and myleran. The list is impressive but disappointing in that the human fails to respond like laboratory animals. It is true that life has been extended in many cases by the proper use of these anticarcinogenic agents, and, at times, they appear to be the answer to disseminated types of malignant cancer, such as acute leukemia, lymphosarcoma, and multiple myeloma.

Since many chemicals have a destructive action on leukocytes they are not used with irradiation. The steroids may be used as supplements to relieve the "adrenal stress" mechanism and thus increase the radiosensitivity of the tissue. At the 1953 International Congress of Radiology Dr. Abraham Hochman, head of the Radium and Tumour Institute of the Hadassah University Hospital of Jerusalem, discussed the use of small doses of cortisone to increase radiosensitivity. He has noted that 30 mg. of cortisone daily during a course of irradiation may change a radioresistant tumor to one of marked sensitivity. Experimentally, 25 roentgens plus cortisone showed a response that would be expected with 200 roentgens alone. It was also noted that nitrogen mustard given in one fourth of the full dose plus cortisone produced a response equal to that of the full dose. Toxic effects are reduced and the patient can be treated for a longer period with the possibility of prolonged palliation.

In Aarhus, Denmark, last year, Professor Karl Krebbs, of the Radium and Tumor Center of the Aarhus Medical School, showed me a few patients whom he had treated with an egg yolk diet and irradiation. These patients were all children with inoperable sarcomas or endotheliomas of bone. The growth of the tumor had been arrested for periods varying from months to 5 years. The eggs from which the yolks are taken are from chickens that are fed a diet of mussels. It is interesting to see how the tumor becomes calcified and localized on this management. Dr. Krebbs believes the egg yolk contains something which stimulates osteogenic replacement of the bone tumor.

Radioisotopes have received a great deal of publicity; however, no case has been cured by radioisotopes alone. It is true that radioactive cobalt (Co^{60}) may give a more homogeneous form of radiation than radium, but its half-life is only 5.3 years as compared to 1,700 years for radium.

The cost of cobalt^{60} is very much less than that of radium, but every 5.3 years only 50 per cent of the original intensity remains. Will it still be cheaper when the cost of replacement or adding for the decay is considered? The next big question is what will radioactive cobalt cost when the government no longer finances A.E.C. personnel and installations? The cost of a cobalt^{60} rotational therapy unit of 1,200 curies is about $80,000 or $90,000, and the building to house it costs about $150,000, so the expenditure will be at least a quarter of a million dollars. Of course, it will be at least 7 to 8 more years before the results of the so-called cobalt bomb can be reported, but so far the results from the use of cobalt^{60} have not been much better than those of conventional 200 to 250 kv. x-ray therapy used in a similar manner.

The field of x-ray therapy has changed so that today radiologists speak of supervoltage radiation, betatron radiation, constant potential, moving beam therapy, and radiation through lead grids. All of these variations are attempts to deliver a cancerocidal dose to the tumor without producing too much damage to the normal tissues.

Supervoltage therapy and betatron installations also mean investments of $150,000 to $250,000 for a single therapy unit. However, when the results of these methods are compared with those achieved with the conventional 200 to 250 kv. installations, statistics indicate only a slight improvement in results.

I would like to speak about European methods of improving technics and results with the conventional 200 to 250 kv. units. In 1953 I attended a course in moving beam therapy at the University of Erlangen Medical School in Germany. It had been established that at least 7,000 roentgens should be delivered to the tumor. In order to deliver this dose to a tumor without permanent destruction to normal tissues, moving beam x-ray therapy has been developed. This may be done in various ways—by pendulum motion, rotation motion, or convergent beam therapy. The object of moving beam therapy is the same in all of the different methods —either to move the patient or the x-ray source during

the treatment period. The focus point must always be located so that the tumor is constantly irradiated during the moving treatment.

The ports used in moving beam therapy are small —2 to 4 cm. wide and 2 to 10 cm. long. Since the rotating tube or patient moves, a large volume of tissue is treated at one time, but the dose to any one port of the skin or subcutaneous tissue is small. There are no "hot spots" or overlapping overexposure, and more homogeneous irradiation results. This gives the same end-result as supervoltage therapy, but at a much lower cost. Present installations can be modified to do this type of treatment, which means that osteopathic hospitals can adapt their present 200 to 250 kv. units to this more modern and efficient approach. The table can be made to rotate or rock or a rotating chair can be used.

The most interesting unit is the new German convergent beam in which the small circular port, with the beam focused on the tumor, rotates in a spiral fashion so that thirty-three rotations are made during a 7-minute treatment. Many patients have been retreated, and the skin does not show the familiar radiation effect or damage seen with the conventional stationary port treatment. The dose deliverable at 5 to 10 cm. may be 400 to 800 per cent of the skin dose. Many patients under this form of treatment who were considered incurable have lived over 2 years with no evidence of tumor. Of those with tumors of the esophagus, lungs, brain, and pelvic organs 15 per cent have survived for from 2 to 5 years.

There are a few malignant conditions in which x-ray is the treatment of choice, but their curability is questionable:[5] (1) Wilms' tumor, (2) lymphosarcoma, (3) Hodgkin's disease, (4) chronic leukemia, (5) Ewing's sarcoma, (6) multiple myeloma, (7) reticulum cell sarcoma, (8) pituitary tumors, (9) metastatic carcinoma, and (10) neuroblastoma of the kidney.

In spite of controversy, x-ray therapy is considered useful in the following conditions as an adjunct to surgery: (1) cancer of the breast, (2) cancer of the corpus uteri, (3) cancer of the thyroid, (4) cancer of the parotid gland, (5) brain tumors, (6) testicular tumors other than seminoma, (7) cancer of the rectum, (8) cancer of the bladder, (9) cancer of the penis, (10) cancer of the vulva, (11) lymph node metastases, and (12) ovarian tumors.

In cancer of the lung, stomach, pancreas, esophagus, liver, ovary, melanoma, and sarcoma of bone, x-ray therapy may be palliative if the case is inoperable or metastatic.

One of the gravest problems still present is the management of the advanced, so-called terminal cancer patient.[6] More of these cases are seen and will be seen owing to palliation and to arrest of the tumor growth by the improved methods of diagnosis and treatment discussed earlier. Many patients survive from 3 to 5 years after treatment; they should then be retreated. The other group of terminal cases is made up of those in whom the disease is far advanced before a diagnosis is made.

Patients in the latter group should not be placed on a narcotic regimen immediately. The family is frequently told that it will be only a short time before the patient will die, and in such an atmosphere, the patient usually does die of inanition or morphine addiction. I am not trying to say that these patients will be cured, but we as physicians must try to prolong life even in hopeless situations.

It is in these cases that surgery for relief of obstruction, pain, or hemorrhage may extend life and comfort. Radiation therapy is still the treatment of choice for metastatic invasion. Radioisotopes may be helpful, especially for the relief of effusion. Chemotherapy also has its greatest usefulness in these cases. The maintenance of proper fluid balance and nutrition and relief of pain will be a challenge to the best internists. However, if the treatment of terminal or advanced cancer is considered as a challenge to medical skill and not as something that is undesirable and troublesome, many of these patients will become useful citizens. It is sometimes amazing to see a cancer-riddled patient who was apparently dying live a comfortable useful life, and it is well known that nature sometimes produces a spontaneous remission in advanced cancer.[7]

Osteopathic manipulative therapy, if applied with the intelligence of the founder of the osteopathic school of medicine, is not contraindicated in the management of cancer. I have seen pain relieved as effectively by osteopathic manipulative therapy as by any narcotic. The problem is that too many osteopathic physicians today do not want to take the time and make the effort necessary to give patients manipulative treatments.

CONCLUSION

The management of tumors is an extensive problem in medicine and this presentation has merely scratched the surface.

It is our purpose as physicians to extend the patient's life and make him comfortable in spite of the hopelessness of the disease. Therefore, every family doctor's office must be a diagnostic clinic, and the treatment and management of every case of cancer must be evaluated by a tumor team. It is with this cooperative spirit and attitude that the survival and possible cure of cancer patients is possible in every hospital, whether it is small or large.

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Environmental Aspects of Lumbar Fatigue*

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INTRODUCTION

Laws of biology and the reactions of the patient as a total organism to environmental stresses and strains form the basis for diagnosis and therapy in the osteopathic school of medicine. In this paper I shall discuss the occupational basis of lumbar fatigue through consideration of the development, anatomy, physiology, and pathology of the lumbar area. I shall also show the value of osteopathic manipulative therapy in such conditions. Much of what I write of the osteopathic concept is based on Russell Peckham's[1] lectures.

RESULTS OF EVOLUTION TO PLANTIGRADE, ORTHOGRADE POSTURE

Keith[2] states that in the process of structural evolution nature has used an adaptational machinery based on physiology rather than on anatomy. Through this structural adaptation, the trunk and spine of man have reached a level of development which makes it possible for the human body to carry on under a great variety of stresses and strains even though man is, as yet, not completely adapted to the upright position.[3] It is a dynamic system built for action. It represents the response of man and his antecedents to the environment and its vagaries, a response reflected in untold minor and a large number of major structural adaptations. These changes permit a high degree of freedom and a wide range of activity, the end result of which is an increased assurance of the continued maintenance and existence of the human body. It is because the vagaries of our environment have made speed so essential to our civilization and because riding has so largely replaced walking that Quiring laments, ". . . man might well imitate the fish in the maintenance of the spine; for the fish, whose locomotor system is the spine and its associated muscles, keeps these parts constantly active. . . ."[3]

There is much food for thought in the following statements made by Levitt:[4]

> Man's musculoskeletal system is a hastily improvised modification of one evolved for quadruped locomotion—to serve a biped animal. Through the incomplete adaptation of man to the erect, biped stance, his muskuloskeletal system is especially subject to stress. . . . Although the principle of the unity of the body has long been accepted by biologic scientists, the musculoskeletal system . . . is still viewed only as the *instrument* of other systems, subject to their influences and instigations—but rarely itself as an instigator. The osteopathic concept for the first time assigned to this system full and reciprocal membership in the community of organ systems.

The evolution of plantigrade posture has necessitated a lengthening of the loins in man with a tendency to sacralization.[2] In the change from pronograde to orthograde posture a shortening of the lumbar area has occurred which was brought about by the sacralization of the twenty-sixth body segment. The lumbar region of the spine has been further modified and strengthened to form a flexible lever which balances the whole weight of the upper part of the body. In the second year, growth changes in the lumbar vertebrae make further extension of the body a permanent possibility. The loins lengthen, and this lengthening permits an easy and graceful carriage of the human body. At this time, too, the lumbar curve appears, which is seen only in the human species for the ape's pelvis is still tilted and the lumbar curve reduced. The increased lumbar curve has little effect on the concavity of the sacrum which is present at birth. This confirms Robuck's[5] statement that the anomalous articulations of the sacrum are embryonic developments of an evolutionary machinery working in such a way as to produce new functional possibilities.

Keith[2] stresses that the brunt of this adaptational change has fallen on the spinal musculature of the lumbar region. The musculature of the spine obtains an ever increasing attachment to the sacrum and pelvis. The pelvis serves more and more as a fixed base from which the erector spinae acts. In the human pelvis the dorsal extension of the iliac crests reaches its climax. The backward tilting of the sacrum also increases the area for muscle origin. In the erect position the dorsal surface of the sacrum looks upward as well as backward. This permits more elasticity of tissue in the lower back than in the upper. Yet, according to Beilke,[6] changes in lumbosacral angulation which normally are 35 to 40 degrees in the human lead to most of the postural disturbances. His x-ray studies prove that stress upon the lumbosacral joint results in fibrosis at the posterior margins. Truslow[7] considers the inclination of the pelvis to be the anatomic key to the variations in anterior posterior postures. Beckwith[8] thinks of the pelvis as a balancing mechanism in postural faults wherein there is frequent association of scoliotic as well as flexion and extension changes in the lumbar portion of the spine.

Only in the human is the whole weight of the suprasacral part of the body supported erect on the spine over long intervals. In postural exhaustion the muscles which act on the short levers of the spine are affected first while the muscles which act on the long costal levers can still function properly. These exhausted short spinal muscles are rested by allowing the vertebrae to rotate until a locking of the articular processes begins, and the transverse processes rest upon the necks of the long costal levers. Civilization has moved faster than our upright spinal adaptive mechanism, and the monotonous and trying postures brought on by modern education, assembly-line industries, and mechanical locomotion must result in osteopathic lesion pathology which, if not corrected or supported, will result in lateral curves and deformities of the chest and vertebral spine.

CAUSES OF OCCUPATIONAL LUMBAR FATIGUE

In the occupational type of lumbar strain the symptoms and physical findings are similar to those of the postural type, except that it is usually possible from the history to connect the symptoms with some movement or position assumed while at work. Usually a statement can be elicited from the patient that working results in exacerbation of the symptoms.

Ellis[9] reports that occupational fatigue of the lumbar area is more common in women than in men and more often is chronic in nature. The explanation of this is that the abdominal and thoracic muscles of women are not as sturdy as those of men and that

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women are subject to more frequent exaggeration of the normal curves.

Fatigue is indicative of some disturbance of tissue nutrition and is accompanied by depression of muscular function. It may be purely physiologic following prolonged use of the muscles. Muscular fatigue results from reduction in the supply of oxygen and is accompanied by chemical and temperature changes and electrical response. Any disturbance of circulation or metabolism, the presence of toxins from focal infections, and irritation of the nervous system, whether mental from fear and hatred of a job or physical as from lack of sleep, may therefore induce fatigue.

Insurance statistics prove that occupational injuries, especially back injuries, are prone to be long lasting and difficult to cure. According to Osgood,[10] back symptoms are reported in 20 per cent of all complaints of occupational or accidental injuries. This percentage is higher than that of any other single cause of disability.

Too many occupations and recreational pursuits, for example, bowling, have a one-sided effect on the skeletal frame and predispose toward asymmetry and derangement of the musculoskeletal system. The assumption of an abnormal position to accomplish a desired task may in many instances result in strains that in turn cause lesions.

Changes in occupational positions, especially those of standing and sitting, in which there is exaggerated lumbar lordosis, to positions of stooping, will cause the posterior spinal ligaments to contract and result in a shearing strain on the lumbosacral and sacroiliac joints. Any work which persistently exaggerates the normal curves over lengthy periods must result in lumbar fatigue.

Keith[2] states that the demand on the neuromuscular mechanism is greater in the sitting than in the standing position. Long hours of sitting upright are particularly exhausting, especially to young individuals in whom growth of vertebrae and of spinal muscles is proceeding rapidly.

The centrum remains surrounded on its upper and lower rim by a continuous ring of hyaline cartilage after the centers of ossification in each vertebral body have united.[9] This is known as the epiphysis of the vertebral body. A complete bony ring which unites completely with the centrum is formed at either end. This union takes place about the twentieth year, usually much earlier in girls than in boys. The blood supply of the epiphysis may be harmed by weight bearing before puberty, and this damage may be a factor in degenerative changes in later life which result in osteophytic formations. Vasomotor spasm is manifested at first by active vasomotor dilatation which causes a hyperemic rarefaction of bone and, later, osteoporosis may result in vertebral collapse. This can be a result of repeated stress and heavy labor. Trauma during adolescence, long forgotten, may be the factor which determines the point at which a latent infection in the system may attack. The red marrow of the vertebra is abundantly vascular. Burns, Chandler, and Rice[11] report the blood vessels are supplied with vasomotor nerves which enter by way of the dentated spaces beneath the anterior and posterior common ligament. In the presence of immobility and local edema due to vertebral lesions, normal variation in tension of these ligaments does not occur, but it can be restored by osteopathic manipulation with restoration of vasomotor efficiency.

From the above review, the effect of childhood play and schooling on youthful spinal growth can be understood. Hours spent at a desk and in television viewing, unless compensated by outdoor play, can result in musculoskeletal stress. During adolescence bad body mechanics are not inevitable, and poor mechanics may be bettered by instruction and personal efforts at correction.

Many postural faults are inevitable results of occupations. It is also true that many people eat themselves into faulty body mechanics. Numerous ordinary anterior posterior problems arise because of a pendulous abdomen. The additional forward thrust of weight has a tendency to affect the feet and result in lumbar lordosis.

ROLE OF OSTEOPATHIC CORRECTION

Periodic osteopathic manipulation will remove lesion pathology and ease the tension caused by pent-up emotions. Once good posture is acquired, its retention is the rule and not the exception.[9] It is easily retained because less effort is required and because it is associated with better health and with less mental and physical fatigue.

Kistler[12] states:

> Proper postural balance is the primary consideration in osteopathic corrective procedures, since its attainment minimizes causal stresses, tensions, gravity imbalances and weight shifts. The osteopathic profession through its clinical findings has shown that normal body mechanics can never exist when osteopathic lesion pathology persists.
>
> The popular conception of lesion pathology would dictate that the lesion positions are limitations of motions in the extremes of normal active positions. . . . the lesion pathology or joint restriction may be at any of the various parts of the joint in lesion.[13]

It is improbable that with an existing osteopathic lesion and consequent muscular effort to avoid strain upon vertebral ligaments and articulations there can be a favorable functioning of the musculoskeletal, neurologic, and visceral systems. Osteopathic manipulative therapy will aid and hasten the recovery from backache and will exert a definite influence toward the prevention of further disability.

A lesion is a structural alteration which causes a functional disturbance. It can be caused by some force or combination of forces exceeding the resistance of tissues affected. It does not have to be a sudden application of a severe force; a prolonged or repeated application of a lesser force may produce the same end results upon tissue. The resultant pathologic conditions are hyperemia, congestion, edema, hemorrhage, fibrosis, and ischemia.[11] Posterior nerve roots are more commonly affected than anterior roots, and the degenerated fibers in the sympathetics are largely vasomotor.

The perivertebral sheath, a continuous sheath of fibrous tissue, envelops the whole vertebral column. Short deep ligaments which constitute the sheath connect each vertebral body to the next and attach at the outer groove of the epiphysis of the vertebral body. A more superficial outer layer, distinctly heavier, specializes into a common anterior and common posterior ligament. The anterior and posterior common ligaments are continuous from occiput to sacrum. The anterior common ligament attaches to the anterior surface of the bodies at the outer margin of the epiphysis. The posterior common ligament is loosely attached to the posterior surfaces of the vertebral bodies and the intervertebral disks but not attached at the epiphysial edge. Both ligaments contain nerve endings and medullated nerve fibers. The fibers of this outer layer are

long enough to pass over three or four vertebrae. The posterior common ligaments in the thoracic and lumbar regions are distinctly dentated with some areolar tissue and blood vessels being interposed.

Normal spinal movements cause tension and relaxation alternately of both common ligaments, thus aiding circulation through the centra and also lymphatic drainage. Thickening of the ligaments and diminished vertebral movements must interfere in some degree with the arterial supply to the red bone marrow of the centra and to a greater degree with the venous and lymphatic drainage of the vertebral bodies. The articular tissue and the intervertebral disk are nourished only by way of this red bone marrow and, therefore, they too are affected.

Application of carefully directed osteopathic manipulative treatment designed to reach the deeper structures and cause movement of the spinal column in various directions produces alternate tension and loosening of the common ligaments with resultant increase in arterial supply and venous and lymphatic drainage of the centra and related spinal structures.

ENLARGEMENT OF LIGAMENTA FLAVA

The ligamenta flava, which arise from the posterior and upper margins of each lamina, pass upward and anterior to the lamina immediately above, and finally enter the neural canal where they fuse in the midline, their lateral extensions forming the posterior margins of the intervertebral foramina.[9] They appose the articular facets and in part form the capsular covering of the articulations. These ligaments are formed of yellow tissue which has considerable elasticity. Acute or chronic trauma causes histologic changes in which white fibrous tissue bearing numerous calcareous deposits replaces the yellow elastic tissue. With enlargement of a ligamentum flavum there are impaired motor and sensory functions of nerve roots and sciatic radiation. Usually ligament enlargement occurs at the fourth or fifth lumbar vertebra, but at times it may occur in the lumbosacral area. Ghormley, Love, and Young[14] report that thickened fibrotic ligamentum flavum may have been the cause of discrepancy in 20 of 62 patients whose spinograms were positive but for whom results of exploration were negative.

CHANGES IN ARTICULAR FACETS

The articular facets are elements of true joints.[15] They consist of two superior and two inferior articular processes arising from each vertebra, at the junction of the pedicles and laminae. They are enclosed by the articular capsule, the inner portion of which is composed of the ligamentum flavum. The function of the capsule is to maintain approximation of the articular surfaces. The facings of the facets is such that in any area of the spine rotation of two vertebral bodies toward the side of separation will tend to approximate more nearly the articular surfaces.

The plane of the articular surfaces of the upper lumbar vertebrae is almost directly lateral in the lumbar region.[15] It becomes oblique between the fourth and fifth lumbar vertebrae and more oblique between the fifth lumbar vertebra and sacrum. The position and shape of the articular surfaces between the fifth lumbar vertebra and sacrum are the ones most frequently altered, because it is here, more than in any part of the bony skeleton, that definite evolutionary changes are taking place.

Spinal studies show marked changes around the margin of articular facets. The articular surfaces are at times twice their normal size because of hypertrophic tissue. Some changes are inevitable in the hyaline cartilage which cushions the surfaces if severe stresses and strains in joint surfaces are repeated.[15] The degeneration which takes place can be demonstrated by a variation in the thickness of the cartilage layer, with fibrillation of the matrix. All of the hyaline cartilage actually disappears later and leaves an area of eburnated bone underlying the joint surface in its place. When these surfaces are subjected to strain they produce pain. If these capsules swell there may be encroachment on the foramen of exit of the posterior nerve root, and thus the nerve root itself may be irritated to the point of producing such symptoms as sciatic pain.

BACKACHE

Many backaches are similar to joint pains in other parts of the body.[15] The sudden onset is characteristic of locking of a joint and indicates a pathologic change in the joint and not a ligamentous or muscular change. Some sort of definite movement often causes the ache, and injury to the joint surfaces of one of these articulations would seem to be a reasonable explanation. The articular cartilage may be thinned out or absent. One injured facet is brought into painful contact with another as these joint surfaces move. Muscle spasm develops with the onset of pain, throwing the surfaces into even firmer contact. Pain continues until muscular relaxation occurs. Rest, anesthesia, or manipulation will promote muscular relaxation, and the joint surfaces may change enough in position to diminish the pain. Such instances represent what Ghormley[15] has termed the "facet syndrome." He says,

> . . . relief by osteopathic manipulations may be of significance in indicating some type of facet lesion or other irregularity that may be relieved by such manipulations.[16]

Pohl and Kenny[17] state:

> Untreated spasm, by destroying muscle tissue, causes atrophy and loss of strength in the muscle because of reduction in the number of contractile elements. If allowed to continue, the final result is frequently a fibrous, inextensible, non-elastic mass. . . . Muscles opposed to those in spasm frequently cease functioning, drop from the patient's consciousness and become alienated or divorced from voluntary action. . . . Alienated muscles are examples of the effect of a physiological block in the motor pathway.

A muscle normally begins contracting from the tendinous insertion. A muscle which has both a tendinous insertion and a tendinous origin, such as the psoas, can pull from either end to produce separate actions. Pulling from its tendinous insertion, the psoas flexes the thigh upon the pelvis, but pulling from its tendinous origin it flexes the pelvis upon the thigh. Could it be that this ability to contract from both origin and insertion causes the terrific spasmodic pain that occurs in some cases of acute psoas myositis?

According to Burns,[18] contracture occurs in small deep spinal muscles after lesioning of adjacent vertebrae. This condition is produced by prolonged stimulation, and the muscle seems firmer than usual. She also pointed out:

> Oxidation seems unimportant in the shortening of muscle fibers, but is essential to return to the resting state. Hence with inefficient circulation of the blood, the resting condition is not adequately attained. . . . prolonged rest, with normal circulation of the blood, is necessary for recovery of normal structural conditions.

Buchthal[19] states that in the capillary blood circulation changes give rise to foci of anoxia in muscle, and

abnormal metabolites produced in these foci stimulate the pain endings which are especially numerous near the blood vessels and the tendinous insertions of a muscle. Pohl and Kenny[20] add, ". . . muscle pain fibers come entirely from blood vessels so that local anoxia might explain the muscle tenderness as well as the spasm."

The only way to get oxygen into these spastic areas is to increase blood flow through the whole body or have the red cells unload more oxygen by increasing the coefficient of oxygen utilization which the red cell possesses. To do this there must be an opening up of more capillary channels for a consequent increase in the total cross section of the blood stream. Surely, this can't take place if a vertebral lesion exists.

INTERVERTEBRAL DISK LESIONS

The intervertebral disk is composed of the cartilage plates, above and below, the nucleus pulposus in the center, and the annulus fibrosus surrounding it.[9] The course and attachment of the fibers of the annulus function as a guy-rope in maintaining the proper relationship of one vertebra to another.[21] The fibers of the annulus bear most of the strain of torsion and extension, and the nucleus bears the vertical or weight-bearing shock on the spine.[9] The nucleus to some degree acts as a fulcrum for flexion and extension of the spine, except that in extreme flexion or extension, the fulcrum shifts either forward or back. The normal disk is not vascularized, and there are no sensory or pain endings. The disk is nourished through the terminal plate.

During flexion the disk is compressed in front and expanded behind. During extension the disk lengthens and narrows. Each vertebral body during flexion is displaced slightly forward on the vertebral body below and during extension is displaced slightly posteriorly. In lateroflexion to the right, Beckwith[8] pictures the disk as operating in a progressively narrowing space with the nucleus pulposus moving to the left as a result of the increased tension of the fibers of the annulus fibrosus caused by separation of the vertebral body margins on the left. It is this displacement of the body that produces a vector of strain on the disks which may eventually lead to a nuclear collapse and degeneration of the annulus.[9]

Bradford and Spurling[22] point out that the fluid nucleus pulposus distributes the force evenly over the intervertebral surfaces of the vertebrae in whatever position the spine transmits that force. In the intact disk, the only forces to which the annulus fibrosus is subjected are those tending to stretch it. Normally it withstands these forces. If the nucleus pulposus herniates, loses its fluidity, or if concavity of the intervertebral surfaces keeps it from functioning, the annulus fibrosus is subjected to compression forces which it is not anatomically designed to withstand. Further damage results to the intervertebral disk and the intervertebral surfaces of the adjacent vertebrae. They also suggest that in scoliosis the shape of the intervertebral disk is gradually altered owing to the shifting of the nucleus pulposus toward the lateral convexity. If this position is continued, displacement of the nucleus pulposus becomes fixed by changes in the annulus fibrosus. It is this alteration in the intervertebral disk which makes correction of scoliosis so difficult.

Spondylosis.—Beneke[23] was among the first to propose that the exciting cause of spondylosis may be degeneration of the disks from compression or stress. He believed that in right-handed persons lifting produces tensions on the large intervertebral ligamentous structure and the annulus fibrosus on the right side of the lower dorsal spine, with consequent development of osteophytes at the point of attachment of these ligaments. In advancing years this rigidity with degeneration in the disk and formation of osteophytes is physiologic and an attempt to strengthen and make a functionally inefficient spine less flexible.

Osteoarthritis.—Fisher[24] defined osteoarthritis as ". . . the series of physiological or pathological changes that occurs in a joint when it is subjected to prolonged or oft-repeated injury either mechanical or toxic, but of a moderate degree of intensity." Perhaps mechanical overtaxing of the lumbar area does not necessarily produce arthrosis, but it surely predisposes to this formation as evidenced by its frequent occurrence in miners and construction laborers. Hypertrophic arthritis can well be the end result of the wear and tear of life. In one year 2,000 cases of backaches were studied at the Mayo Clinic and 66 per cent were diagnosed as osteoarthritis. In another study of 2,000 x-rays at the Clinic[9] it was found that marginal spondylosis of lumbar vertebrae was present in 67 per cent of the men and 40 per cent of the women at 50 years of age. The universality of these findings in the lumbar area can be due to the abnormal tensions on the fibers of the anterior common ligament which determine the direction of the marginal spurs. In the midlumbar region the vector of force is not compression; it is strain or tension on the ligaments between the anterior and lateral surfaces of the vertebra; it is here that the preponderance of lipping is found.

It does not seem fair for most insurance companies to refuse to allow full-time payment for back injuries which show hypertrophic arthritis. Mere presence of calcium deposition does not cause pain, but, with progress of the affection, the cartilages are finally eroded, joint spaces are diminished, and the joints become painful.[9] According to Crews:[25]

> The arthritic spine is definitely weak, since the disease and secondary changes in the ligaments and muscles tend to limit motion of the spine. The friability of the soft tissues due to the chronic condition prolongs the healing time and gives rise to severe pain. . . . I have noted in the majority of cases that a patient suffering with arthritis is not a malingerer but has a definite pre-existing disease that delays his recovery from two to three times as long as in those without such disability.

In my opinion osteopathic manipulative therapy is the only means of preventing threatened fixation of an osteoarthritic spine. Osteopathic manipulative therapy will improve the general health of the patient and, in correcting body malalignment, will reduce the stress and strain of unbalanced posture, thus predisposing to further progress in healing of the existing osteoarthritis.

Differential Diagnosis.—

In the diagnosis of any lumbar problem, it must be determined if the condition is structural. The history and physical and osteopathic findings will aid in differential diagnosis. The osteopathic physician is best qualified to evaluate properly the following points in diagnosing a lesion: tissue change, change in gross position, and restriction of joint motion.

The greatest concern is the possibility of a herniated disk. In degenerative changes and injury such as compression or flexion stress, the posterior portion of the annulus fibrosus may weaken and rupture. The semiliquid nucleus pulposus may be forced out between

the bodies of the vertebrae, protrude into the spinal canal, and press upon and cause either friction or pressure neuritis in the root of the nerve which makes its exit from the spinal canal at the level of the protrusion. The protrusions which cause symptoms are usually those which are in the posterolateral portion of the disk and press upon the nerve root where it makes its exit from the spinal canal. In this area the nerve is compressed between the displaced nucleus pulposus substance and the ligamentum flavum or the wall of the intervertebral canal. At times hypertrophy of the ligamentum flavum can simulate the symptoms of herniated disk. Ninety to 95 per cent of herniations occur at the fourth lumbar and lumbosacral disks.[22]

There are no physical, neurologic, or orthopedic signs which can be found only in herniated disk. All known signs may also be found in other conditions. Yet if symptoms persist after continued osteopathic manipulative treatment and after other clinical entities are excluded by physical and x-ray examinations, the majority of the remaining group of patients with intractable sciatica and back pain may have herniation of the nucleus pulposus and contrast myelography should be performed.

Love and Walsh[26] have observed that the herniated disk is apt to be reduced by flexion of the lumbar spine, while hyperextension causes the disk to protrude more markedly. German physicians have urged that in taking x-rays after Lipiodal injection the lumbar spine be brought into extension or the disk herniation may be overlooked. Hoag and Rosenberg[27] do not entirely subscribe to the above findings yet they confirm it to some degree when they state:

> The position of flexion is conducive to herniation as far as the magnitude of the *pressure* on the nucleus is concerned; the position of extension is conducive to posterior herniation as far as the *elastic properties* of the annulus fibrosus and the posterior longitudinal ligaments are concerned.
>
> . . . when the spine is in flexion, the pressure on the nucleus is greater than in extension, but the posterior portion of the annulus is better able to withstand this greater pressure; conversely, when the spine is in extreme extension, the posterior portion of the annulus can be ruptured more readily by the pressure of the nucleus, but this pressure is fortunately lower than in flexion.
>
> Assume now that the mobility of the nucleus pulposus is impaired by some abnormality, degeneration, or pathologic condition, such that the nucleus becomes lodged in the posterior part of the intervertebral disk; or assume that the motion of the nucleus, normally rapid, becomes sluggish so that it remains in the posterior part of the disk momentarily when the spine is extended. Under these circumstances the pressure in the nucleus will be abnormally high when the subject exerts himself to extend the spine.
>
> If [the mobility of the nucleus is impaired and] is combined with insufficient elasticity of the posterior part of the annulus fibrosus (and posterior longitudinal ligament) [such as may occur when the posterior edges of the bodies approximate each other in extreme extension wherein their elastic coefficients are left at negligibly small tension;] then extreme extension is the position of the spine most conducive to posterior herniation of the nucleus.

Some neurologists and orthopedic surgeons in the absence or diminution of the ankle jerk and paresthesia and hypesthesia in the distribution of the sciatic nerve insist on lumbar spinal puncture. If the spinal fluid contains more than 40 mg. per 100 cc. of protein an intervertebral disk lesion may be present. If the total protein is under 40 mg. per 100 cc. an intervertebral disk lesion may or may not be present. This increase in spinal fluid protein is found in 70 to 80 per cent of cases.[22] Other conditions can also elevate the total protein.

TREATMENT

The treatment for disk herniation is surgery. Results of surgery indicate that there is much ground for improvement.

In treating the major types of occupational fatigue, vasodilation is necessary to counteract existing stasis. Osteopathic manipulation to correct joint lesions and proper support will relieve most back difficulties. There should be 1 month of treatment for each year of overstress, remembering that the body stops growing at 18. The sacroiliac region acts as a shock absorber, and in about 80 per cent of lumbar problems there is an involvement of the sacrum which must be corrected before lumbar correction can be maintained.

There are several reasons for prescribing a sacroiliac or lumbosacral belt: (1) stress is maximal at the lumbosacral articulation because of the great superimposed weight and greater angulation between the fifth lumbar and sacrum, and more stress is thrown on the joints of the lower portion of the spine.[15] In psoasitis the back is already in an abnormal position, there is no factor of safety on motion, and any force exerted upon the lumbar joints held in this extreme position can injure them, whereas a similar jar exerted on joints in which a play is possible will have no consequence. (2) Changes in intrapelvic pressure are diminished with wearing of a belt. According to Ellis,[28] in a standing position intrarectal pressure is estimated to be 15 to 25 mm. of mercury; in the act of lifting it is estimated to be 80 to 100 mm. of mercury, and in the sudden initial strain of lifting the intrarectal pressure is thought to be 250 mm. of mercury. Therefore any sudden trauma to the body, direct or indirect, can increase the intrapelvic pressure to a point which will provoke pain and radiation as a result of sudden congestion or actual pull on inflamed nerves. The patient should wear Dreher's modified Camp sacroiliac belt, putting it on as soon as he arises. Its principle is the same as that of the elastic stocking: compression of the veins before they fill up. (3) Wearing a belt reminds the patient that he must restrict his activities.

Some patients with acute psoas myositis should be hospitalized and traction applied. Neuwirth, Hilde, and Campbell[29] point out that when the spine is in the horizontal position forces are removed which in the upright position act on the vertebral column, especially on the intervertebral disks; in other words, forces are applied to the lumbosacral segment which are the opposite to those operative in the erect position. Traction relieves muscle spasm by relieving pressure upon nerve roots, blood vessels, and lymphatics, with relief of pain and restoration of blood and lymph circulation. Patients should receive osteopathic manipulative therapy while they are in traction.

CONCLUSIONS

Osteopathic physicians are ideally suited to be industrial physicians for they, more than any other type of physician, endeavor to promote good body mechanics in a measure favorable to the maintenance of health and efficiency. Osteopathic manipulative therapy not only aids and hastens the recovery of occupationally fatigued backs but aids in preventing disabling lumbar pain.

In conclusion let me enumerate Denslow's[30] reasons why the musculoskeletal component of the or-

ganism contributes to Dr. Still's concept of body unity:

First, every organ and tissue in the body has a distinct and well-defined anatomic and physiologic relationship to a part of the somatic system through the segmentation of the voluntary and involuntary nervous systems. Second, clinical methods have shown that somatic structures are abnormal in the presence of pathology in remote tissues, and that therapy directed at the abnormal somatic structures may favorably influence remote disease states.

Though the study of the effect of the spinal lesion in body functions is not complete, we have proved to ourselves that correction of these lesions has been followed by relief from disease or musculoskeletal disability and the return of good health. If we, as osteopathic physicians, apply our manipulation in light of Denslow's statement, we will prove what Thorburn[31] has said: ". . . the physician who has knowledge of osteopathy has something far greater in value than any other therapeutic agency which has ever been presented to the world." Osteopathy is a system of practice in which biologic laws and reactions of the patient as a total organism to the stresses and strains of his environment form the basis for diagnosis and therapy.

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THE INDUSTRIAL PHYSICIAN

The success of the medical program will depend largely upon the manner in which it is organized and administered. The industrial physician needs to be more than a good clinician. As a matter of fact, he must have qualifications and training which most good clinicians do not have. For example, he must be an extremely able administrator, and he must have the ability to fit into an organization and work with people. The industrial physician must have an understanding of production problems, the principles of management, and the essentials of personnel work. His clinical knowledge must include a great deal which the average physician in private practice does not ordinarily need to know, such as toxicology and the recognition of hazards in the industrial environment. The physician concerned with environmental medicine in industry cannot make a proper preplacement examination unless he is familiar with the job, its physical demands, and its inherent hazards, as well as the physical capacities and limitations of the employee.

In other words, the industrial physician needs a working knowledge of chemistry, engineering, psychology, and business administration, as much as he needs clinical acumen. He practices a broad specialty rather than a narrow one, and, unlike other specialists, the more training he gets, the broader are his horizons and the more capable he is of coping with industrial problems incident to working man.—From Environmental Medicine in Industry. C. Richard Walmer, M.D., *Public Health Reports*, June, 1954.

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III—RESEARCH AND EDUCATION IN OSTEOPATHY

This editorial is the third in a series on the Cole thesis on research and education in osteopathy,[1] which was appraised in the October JOURNAL *as a document which would prove indispensable to the student of medical history, both without and within the osteopathic profession. The editorial series will review the thesis in detail and will attempt to interpret its findings and relate them to living osteopathic history.*

Cole, early in his thesis, refers to Abraham Flexner's "Medical Education in the United States and Canada." The Flexner study, which appeared in 1910, revealed the "deplorable conditions" existing in both medical education and research in the United States. Bitterly criticized in certain educational circles, it is now rated as a classic in the field it covered.

The Flexner report, as can be seen in perspective, played a primary role in revolutionizing medical education in America. Abraham Flexner judged more wisely than he knew. Yet it should be clearly understood that the general practitioner in America in the 1900's, whether allopathic, homeopathic, eclectic, or osteopathic, was untouched by the stirrings that were present—whether they were the advances in the medical science originating in Europe in the last quarter of the nineteenth century or the movement to lift the standards of medical education in America in the beginning years of the twentieth century. Cole points out:

> . . . it was the method in which medicine was practiced and not medical education that caused Still to develop and practice a new concept and to establish a new profession separate from that of traditional medicine. . . . It was never the intent [of osteopathic education] to eliminate adequate methods of therapy but rather to offer a method of improvement. In many instances manipulative therapy was offered as a substitute for certain medical substances . . . . [but] the revolt was not against any therapy that would aid the patient but against methods that prevented recovery from occurring.

But the leaders of even the youngest group in medicine were responsive to the sharp barbs of the Flexner study.

Still's first departures from the medical practice of his time were based on a body of propositions which he evolved, dealing with health and disease. These propositions or set of concepts we now group succinctly together and term the "osteopathic concept." Developed and related to modern medical science the osteopathic concept epitomizes the philosophy, art, and science of this school of medicine. A "platform of osteopathy," published by Still in 1910, embodied many of these propositions. This platform Cole terms "a radical departure from the medical practice of the time." He says further:

> Today several of the points of the platform have been abandoned, while others have been modified. However, the basic premises that the body as a unit is amenable to manipulative therapy and that anatomical and physiological harmony are necessary for health to exist, have been retained.

The author quotes Still's fundamental propositions on the necessity for an adequate supply of blood to "be generated and delivered to all parts," a statement later formulated by him into the well-known aphorism, "The rule of the artery is supreme." The Cole thesis establishes the following fact of importance:

> Only after these ideas had been elaborated did Still introduce the concept that functional spinal column changes might be a factor in the etiology of disease. He described and demonstrated that spinal column alterations did exist and did influence physical reactions in the human body. This area of spinal column dysfunction was termed the "osteopathic spinal lesion" and "osteopathic manipulation" was designed to eliminate these areas.

The limits imposed by both the subject of the thesis and its available space permit its author only such discussion of the Still hypotheses as may be necessary to those who have occasion to consult the manuscript but know little about osteopathic principles. In summarizing, Cole suggests that the most useful contribution of Still was his thesis that "in general, biological reactions are important in diseases and are to some extent amenable to manipulative therapy.'" And he goes on to add:

> . . . From Still's ideas the present-day approach to disease by the osteopathic physician has evolved. Specifically the osteopathic concept is based on these ideas: (a) every portion of the body must have an adequate arterial supply and venous drainage; (b) within each individual there are normally present the chemical substances necessary to maintain an individual in a state of health; and (c) when the structure of a cell, tissue or organ is altered, the function is also altered. When considering these statements it should be stressed that the duration and extent of the alterations are important when attempting to evaluate the ability of the cells to recover. It is when the factors mentioned above are altered to the extent that the natural inherent recovery potential is lost that cell death occurs.

The therapeutic approach to disease by the osteopathic physician still stresses the manipulative approach, but does not

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eliminate any therapy that is of proven value in aiding the patient.

This brief summary of Still's contribution to medicine may not suggest to the osteopathically uninformed person that the new movement was revolutionary in effect; that it was actually revolutionary can be best appreciated only after a study of the medical practice of the early 1900's. That the Still philosophy remains revolutionary may come as a surprise, even to the osteopathic physician, who is apt to take his heritage as a matter of fact, thinking that osteopathy is incapable of producing a radical alteration in medical thinking today.

Yet if the doctor of osteopathy will dip widely even though casually into the medical literature of the last decade he will find himself amazed by a very occasional article which he will suddenly recognize as having been written from what will seem to be an entirely new and different point of view—and yet somehow he will find the thinking in such articles strangely familiar. And then with a start he will realize that here is an approach to which he, the reader, has been long conditioned. He will recognize its similarity to osteopathic philosophy as it has been developed over more than a 60-year span. (For example, see "The Gold Headed Cane in the Laboratory," by Rene J. Dubos, M.D., Sc.D., Ph.D., reprinted in the July, 1954, JOURNAL A.O.A. from *Public Health Reports*, April, 1954.) And every teacher in our osteopathic colleges as well as all of our leaders should supplement Cole's conclusions about osteopathic philosophy by reading a recently published monograph, "The Meaning of Social Medicine," by Iago Galdston. This critique of present-day organized medicine, so long dominated by etiologic and curative concepts, will reveal not only the breadth and depth of Still's philosophy, but also its revolutionary quality.

The Flexner report is accepted today as the definitive study of American medicine for the period it covers. Cole points to its correctness as applied both to schools of osteopathy and schools of medicine. Flexner categorized osteopathic schools as "schools of medicine," and evaluated them accordingly. All medical education was in a deplorable condition in Missouri at this period as it was, with few exceptions, all over the United States. Osteopathic schools of the era cannot be accurately appraised or understood except as they stand in relation to medical schools of the same period. This important and overlooked observation of the Flexner report appears in the thesis: "It is interesting to note that . . . Flexner . . . was extremely critical of the *manner* in which the osteopathic concept was presented to osteopathic students but *not* of the concept itself." Flexner made this statement: "Once more, *their tenets* [osteopathy's] *are not in question*." (Italics supplied.) Flexner's statement can in no way be construed as an acceptance of any phase of the osteopathic concept, but it was certainly objective to a degree not again applied to osteopathy until the mid-century. Cole emphasizes that it was organized medicine which fastened on Still the appellation of "cultist, quack, and charlatan." This position has been constantly maintained for a half century and constitutes today an iron curtain between the two professions. A first small rent in the curtain was finally made by the American Medical Association Committee on the Relations between Osteopathy and Medicine.

In his study of "Osteopathic Education and Research," Cole dispels certain misconceptions that have existed concerning the objectives of osteopathic colleges. He establishes as a fact that:

> . . . It never was the intent to eliminate adequate methods of therapy but rather to offer a method of improvement. In many instances manipulative therapy was offered as a substitute for certain medicinal substances, and no indication can be found in Still's writings that even suggests that necessary surgery should not be performed. The revolt was not against any therapy that would aid the patient but against methods that prevented recovery from occurring.

Still never claimed personal charismatic qualities, but he maintained from the beginning that the manipulative therapy which he described could be taught to others. An osteopathic school was the natural and immediate result, with other schools soon to follow. Manipulative therapy was employed empirically by the first osteopaths in an era of purely empirical therapeutics. Cole emphasizes the absurdity of making any claim to high standards for a professional osteopathic education or research "that were actually non-existent."

The pattern for osteopathic education in the period from 1900 to 1910 was simply that of medical education in the Middle West of that same period, except that osteopathic education developed a new orientation to the problems of health and disease and presented a new method of treatment. This difference in approach by the newer group of doctors resulted in unusual clinical benefits.

The preparation and training of osteopathic graduates as physicians should be judged co-ordinately with graduates of other medical schools of the same period.

Except for a very few schools along the eastern seaboard, medical education in the United States in the closing years of the nineteenth century and the first decade of the twentieth was nominal. Medicine was learned by precept, example, and practice. Even graduates of the few better eastern schools "completed" their training largely by going on to Europe, where opportunities for formal medical education were open.

The records show that research was being discussed during this period by both osteopathic and medical leaders. Cole concludes from his study of contemporary documents that:

> Osteopathic research was the natural outgrowth of the same forces that produced the discipline. The theories of Still required elaboration and substantiation. . . . It soon became evident that, in order to substantiate the claims made by the osteopathic profession, certain experimental evidence was essential. This evidence could only be obtained through adequate laboratory investigations.

Thus the thesis establishes that almost from the beginning the development of the profession and the research program have paralleled each other.

With a perspective of osteopathic research and education that is more than a half-century in depth Cole conceives the entire program as falling into four periods. He classifies its first period under the heading

of The Beginnings of Osteopathic Research, 1893-1913. A more immediate problem of the new profession than research, however, was the improvement of osteopathic education. In 1904, 10 years after the first class was graduated, "the length of the training period for osteopathic physicians was increased . . . from two to three years." In the same year a Committee on Education was established by the American Osteopathic Association (the national body was then in its seventh year of organization) in an attempt to discourage the indiscriminate opening of osteopathic schools and to standardize osteopathic curricula. Within a few years four osteopathic colleges were closed because they failed to meet the requirements set up.

The importance of training in the basic sciences and their relationship to clinical osteopathy were stressed within a decade of the establishment of the first school. In an article, "The Relation of Physiology to the Diagnosis and Treatment of Disease," published in THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION, June, 1905, C. H. Spencer related the scientific phase of the curriculum to the clinical in this statement:

> . . . the physician, without a clear and concise knowledge of physiology, is wholly unqualified to make accurate diagnosis or to handle rationally nature's means of resistance, relief, and recovery.

Such a conception of the role of medical science in the training of a physician led naturally to an appreciation of the role of research in affording an even more fundamental basis for adequate training of the physician.

THE CLINICAL ASSEMBLY AT DALLAS, TEXAS

True to Texas tradition the twenty-seventh Clinical Assembly of the American College of Osteopathic Surgeons and its four affiliated groups meeting in Dallas, October 31 to November 4, 1954, chalked up the largest attendance yet recorded at this noteworthy annual event of the profession; the total registrants numbered well on the way to 1,000. And this number exceeded by more than 100 the Assembly's previous high attendance tide.

The participating organizations need but to be named to be recalled by our readers: in addition to the College of Osteopathic Surgeons, there were the Osteopathic College of Radiologists, the Osteopathic Academy of Orthopedics, the Osteopathic College of Anesthesiologists, and the Osteopathic Hospital Association.

Each participating organization meets independently, conducts the year's organizational affairs, and, especially, presents its professional program of the year. In fact, for 5 days previous to the official opening of the Assembly proper, policy-making and executive bodies of the various specialty organizations and certifying boards had been in session.

OPENING PROGRAM

The Sunday evening official opening of the Assembly, occurring on October 31, was presided over by President James M. Eaton of the College of Surgeons. Seated on the platform with Dr. Eaton were Mr. E. L. Herbert, president of the Hospital Association; Dr. C. A. Tedrick, president of the College of Radiology; Dr. Charles H. Brimfield, president of the Academy of Orthopedics; Dr. J. Craig Walsh, president of the College of Anesthesiologists; and Monsignor William F. O'Brien, Vicar General of the Dallas Diocese of the Roman Catholic Church, who gave the invocation. The opening of the Assembly was recognized and honored by the presence of the President of the American Osteopathic Association, John W. Mulford, Cincinnati, who was also seated on the platform, as was Mr. John Ben Shepperd, Attorney General of the State of Texas. President Eaton graciously responded to the warmly received Address of Welcome of Attorney General Shepperd.

The opening exercises which were held in the Crystal Ballroom of the Hotel Baker were properly brief and were followed almost immediately by the now historic and well-established Trenery Lecture, the eleventh in the series, delivered by Kenneth L. Wheeler, Philadelphia, a fellow of the College of Radiology and of the College of Surgeons, distinguished as a student in his chosen specialty and a consultant in that field. Dr. Wheeler spoke on the "Integration of the Duodenum and Pancreatico-Biliary Tract, A Clinical-Radiological Approach." The lecturer was the second to receive the bronze Trenery medal, to be given each year to the designated speaker. Readers will recall that the medal was designed by the well-known artist, Mr. Reud Freund of Collegeville, Pennsylvania, and that one of the medals is on exhibit in the permanent museum of the American Numismatic Society, New York City, where, along with other outstanding medal and decorative art, it holds a position of prominence. It will also be remembered that only last year the first medal to be struck from the die, a silver one, was presented to Mrs. Gertrude Trenery, widow of Dr. Trenery, at the 1953 Trenery dinner held in Los Angeles during the twenty-sixth Clinical Assembly.

SCIENTIFIC PROGRAMS

The scientific programs began in part on Sunday, October 31, and continued through Wednesday, November 3. Tried and proved patterns of other years were followed for the most part in the programs. The College of Radiology and the Academy of Orthopedics, as is the custom, held a combined meeting on Wednesday morning, November 3. All the groups completed their scheduled programs on the third except the College of Surgeons, which held a Surgical Forum on Thursday morning, November 4, covering problems arising in the practice of surgery, orthopedics, urology, radiology and anesthesiology. This innovation was highly successful and well received by those attending.

COLLEGE OF SURGEONS

Color films depicting surgical operations were presented from 8:30 a.m. to 10:30 a.m. on Monday, Tuesday, and Wednesday through the courtesy of Davis and Geck, well-known manufacturers of surgical supplies. Paul C. Williams, M.D., Dallas, associate professor of orthopedic surgery, Southwestern Medical School, University of Texas, spoke on the "Conserva-

tive Management of Intervertebral Disc Lesions." The Academy of Orthopedics joined with the College to hear this guest speaker. All attendants spoke appreciatively of the excellent program developed by Dr. J. Donald Sheets, of Detroit.

The annual conclave and banquet, looked forward to by all registrants of each participating body, combined a ceremonial event of distinctive ritual with a social occasion of friendly renewal. It was on this occasion that incoming president, J. Willoughby Howe, Hollywood, California, was invested with high office, candidates for future membership were acknowledged, the roll call of new members made, the solemn charge of the College to the 1954 class delivered, the degree of fellow awarded, and life memberships bestowed. These life memberships were granted to Drs. Edward T. Abbott, Los Angeles, and Carlton Street, Philadelphia.

This ever-memorable occasion was made most distinctive by the presentation of the first Orel F. Martin Medal, and this to Dr. Martin himself, long-time secretary-treasurer of the College until his retirement last year to become consultant to its Board of Governors. The significance of this newly created award demands a much more complete handling than the limitations of this editorial permit. An interpretative comment is reserved for early in the coming year.

The new president, Dr. Howe, well known throughout the osteopathic profession, is a distinguished surgeon and professor of surgery at the College of Osteopathic Physicians and Surgeons. Dr. J. Donald Sheets of Detroit was made president-elect and will be installed at next year's Annual Assembly.

Others elected were Dr. Lucius B. Faires, Hollywood, vice-president (Dr. Faires served as president in 1951-52) and Dr. Charles L. Ballinger, Toledo, Ohio, re-elected as secretary-treasurer. Newly elected as members of the Board of Governors were: Drs. Howard A. Graney, Des Moines, Iowa; Howard Earl Lamb, Denver; and Howard B. Norcross, Los Angeles.

The degree of fellow was awarded to the following osteopathic physicians: Leo R. Conley, Columbus, Ohio; Walter R. Garard, Los Angeles; W. E. Gorrell, Kerrville, Texas; L. Raymond Hall, Kansas City, Mo.; D. W. Hendrickson, Wichita, Kansas; Charles R. Hetzler, Portland, Maine; Howard W. Kenaga, Hugo, Oklahoma; Loring W. Mann, Pomona, California; George F. Scouten, Long Beach, California.

COLLEGE OF RADIOLOGY

The excellent program of this College was prepared and executed under the direction of Dr. John H. Pulker, Flint, Michigan. Its sessions were presided over by President C. A. Tedrick, Jefferson City, Missouri, veteran radiologist known to scores of osteopathic students of radiology to whom he has been a valued mentor. Dr. Pulker assumed the office of president; Dr. A. G. Reed, Tulsa, Oklahoma, was made president-elect, and Dr. F. A. Turfler, South Bend, Indiana, was elected to the position of secretary-treasurer. Dr. Turfler replaces Dr. Miles Snyder, who had rendered yeoman service for the past several years in that responsible position. Other officers include as members at large: Hervey S. Scott, Mission, Kansas; Dwight A. Stiles, Phoenix, Arizona; and Jesse P. Oswald, Oakland, California. Other members of the College's governing body include Dr. J. Armande Porias, Miami, Florida, and Dr. Tedrick as past presidents.

COLLEGE OF ANESTHESIOLOGISTS

This college is one of the more rapid growing of the profession's specialty groups. Its excellent program was well attended by members and guests. The College's first president, experienced as president of the now superceded Society of Anesthesiologists, J. Craig Walsh, Philadelphia, was succeeded by Dr. J. Calvin Geddes, Mt. Clemens, Michigan. Others elected were: William A. Gants, Providence, Rhode Island, president-elect; Mahlon L. Ponitz, Detroit, vice-president; Crawford M. Esterline, Kirksville, Missouri, re-elected secretary-treasurer.

ACADEMY OF ORTHOPEDICS

The program of this group perhaps has long proved a most popular one among guests of the Assembly, and this appeal was again demonstrated in 1954. The Academy's 1954-55 president, succeeding President Charles H. Brimfield, York, Pennsylvania, is Dr. Walter R. Garard, Los Angeles. Dr. Karl P. B. Madsen, Oakland, California, was elected vice-president; and the group's efficient and hard-working secretary-treasurer, Dr. J. Paul Leonard, Detroit, was re-elected. The Academy's Board of Directors consists of Drs. Brimfield, Garard, Madsen, and Leonard and Drs. Warren G. Bradford, Dayton, Ohio; Arthur E. Miller, Los Angeles; Donald Siehl, Dayton, Ohio; Jack M. Wright, Toledo, Ohio; Arnold Gerber, Philadelphia; and Thomas T. McGrath, Kansas City, Missouri.

HOSPITAL ASSOCIATION

During the past year the Hospital Association, consistent with the amazing growth and development of osteopathic hospitals, has made great strides. President E. L. Herbert, completed 2 years of a conservatively guided but progressive administration; and the organization's most able executive secretary, Mr. Robert P. Chapman, Davenport, Iowa, began his second year as a fulltime executive officer.

Mr. Keith Bowker, Flint Osteopathic Hospital, was elected president; Mrs. Alixe Nuzum, Des Moines General Hospital, Des Moines, Iowa, was made president-elect. Mr. Wayne Annis, Civic Center Hospital, Oakland, California, and Mr. Philip Rosenthal, Metropolitan Hospital, Philadelphia, were elected as the first and second vice presidents, respectively. Mr. Earl J. Lewis, Art Centre Hospital, Detroit, replaced as secretary-treasurer, Dr. R. F. Lindberg, Detroit, who rendered a distinct service to the Association for a period of 3 years. Mr. Chapman was reappointed as executive secretary, with national headquarters at Davenport, Iowa.

For the second time the recently created (1953) American College of Osteopathic Hospital Administrators held its annual meeting and banquet. This new

body is laying the foundations for an educational organization geared to render a valuable service to long experienced highly responsible men within osteopathic hospital management. Its newly elected officers are: Mr. Fred A. Sharp, president, Mr. Heber Grant, vice-president, both of Cranston, Rhode Island.

New trustees for the College are: Mr. Philip A. Rosenthal; Mr. A. C. Parmenter; Mr. Irvin Biggs, administrator, Denver, Colorado; and Mr. B. Allen Sumner, administrator, Park View Hospital, California.

TECHNICAL EXHIBITS

Again, as in 1953, this section was not large, but the exhibitors were well-known firms of excellent commercial and professional standing. Attendance was unusually good and was a matter of favorable comment among the exhibitors.

RESUME

In a series of three editorials which appeared in the November and December, 1953, and the January, 1954, issues of THE JOURNAL, the attention of the osteopathic profession was directed toward the worth of the Annual Clinical Assembly of the American College of Osteopathic Surgeons. This meeting impresses all observers with its value and not only to participating groups; it is highly representative of the osteopathic profession at its best. And this is not only because members exemplify special skills or the fact that the groups are essentially teaching bodies; it is also because their leaders, grounded in the osteopathic profession itself, and called to a special service organizationally and professionally, are dedicated men, all of them.

It is true that specialization spells segmentation within medicine—all medicine, and that is not good. It is especially not good in osteopathy, neither philosophically nor organizationally. The trends reported in the December, 1953, and January, 1954, editorials remain as challenging problems. And it is not only the American Osteopathic Association, the parent body, which is affected by the contradictory influences at work in osteopathy; the Assembly has by no means solved all of its own problems, either as a joint body, or as members within that body.

Perhaps no solution will become possible by taking thought—as is so often true with the individual. Perhaps the social forces which are reshaping all medicine to society's needs and the particular ferment which is now enlivening the osteopathic profession have had neither the time to begin a remolding as forces or to work as a ferment. They are matters which must mature within the womb of time, not to be tampered with by man. The problems laid out last year editorially may be among those.

Yet it is vitally necessary that every sector of this profession be aware that such problems exist. It is much more important that none forget the purpose to which osteopathy emerged from the medical body at the turn of the century: its continuing re-orientation.

The 1955 Clinical Assembly is scheduled for Washington, D. C.

RESEARCH FELLOWSHIPS

Only a year ago THE JOURNAL expressed editorially the hope that the osteopathic profession would develop within itself talented and properly qualified young scientists of such ability as to become eligible for development as competent investigators under a research fellowship program. Readers will recall that we referred specifically to the Public Health Service Research Grants administered under the National Institutes of Health, and especially to the grants program involving Research Fellowships. It will be remembered that such fellowships would be available to applicants holding the Bachelor's degree, Master's degree (or the equivalent in graduate training), or Doctor's degree. Emphasis was placed on "the highly disciplined procedure that awaits capacity upon the part of the individual to receive such training, and the originality of mind which later makes possible creative scientific achievement."

The December FORUM reports the details of the first postdoctorate research fellowship which has been awarded by the National Institutes of Health of the United States Public Health Service to an osteopathic physician (Dr. John A. Chace). That award in itself establishes a precedent as does the sponsorship of the training by an osteopathic scientist (Dr. J. S. Denslow).

This award is firmly based on achievements in osteopathic institutions not unknown to the Public Health Service. The research programs conducted by Dr. I. M. Korr and his colleagues under the auspices of the Bureau of Research of the American Osteopathic Association have become widely known. Each osteopathic college has and is administering successfully teaching grants in cancer and cardiovascular diseases, as projects of the U.S.P.H.S.

This recognition indicates that the osteopathic profession has the capacity to develop within itself properly qualified young scientists, that we have within our own ranks mature osteopathic scientists able to administer their further training, and that professional scientists of rank are being challenged by the osteopathic concept to the point that they are aiding in its further unfolding—both within our organizations and without.

The Cole thesis, "Research and Education in Osteopathy"—now being discussed in a series of JOURNAL editorials—has gained additional validation by this grant. Educational and research grants made from sources without the osteopathic profession re-establish the fact documented so thoroughly by Cole that this profession from its beginnings set forth on a road of research and education down which it has never ceased to travel, even though haltingly at times. Where osteopathy is today, with its broadening acceptability by the world of science, is but a natural consequence of events through the long years and the dedicated determination of many men. And their numbers continue to grow as the profession's acceptability continues to widen.

Notes and Comments

Planned Parenthood.—

A directory of practical use to physicians has been made available by the Planned Parenthood Federation of America, 501 Madison Avenue, New York 22, N.Y. It is priced at 20 cents a copy. The directory is a listing of clinic services in the United States for medically directed birth control and medical consultation for infertile couples. Patients are served by specially trained physicians at these locations. The organization itself is a recognized health and welfare movement, endorsed by leading social, religious, and medical organizations. Its primary objective is to make it possible for all married couples to have the number of children they want when they want them. PPFA is a member organization of the National Health Council, as is the American Osteopathic Association.

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Physical Medicine.—

There is a tendency among laymen to confuse osteopathy with physical medicine, but the osteopathic profession knows that it encompasses much more than physical medicine. Although physical medicine represents the oldest form of medical treatment, many doctors of osteopathy and doctors of medicine alike are not mindful that physical medicine in the last few years is beginning to move into a new sphere of importance. Readers of THE JOURNAL should read the article appearing in the June, 1954, issue: The Need for Research in Physical Medicine, by Philip J. Rasch, M.A., C.T., Assistant Professor, Department of Physical Medicine and Rehabilitation, College of Osteopathic Physicians and Surgeons, Los Angeles.

That physical medicine is a challenge of the immediate future is the theme of an outline assembled by W. W. W. Pritchard, D.O., chairman, American Osteopathic Board of Physical Medicine and Rehabilitation, and made available to osteopathic physicians. Approximately 258 doctors of medicine are now certified as specialists in physical medicine and rehabilitation, but only three doctors of osteopathy have been certified in this newest of specialty fields by the Board of Trustees of the American Osteopathic Association. By July, 1955, perhaps twelve or fifteen osteopathic physicians may prove eligible for certification on the basis that they have met certain stipulations which include the practice of physical medicine and rehabilitation as a specialty since 1939. All others interested in certification in this field will need to meet the approved training program which has been set up under the direction of the Advisory Board for Osteopathic Specialists. Dr. Pritchard estimated that we cannot have more than seven physicians ready for examination by July 1, 1958. That moves up possible certification of those doctors undertaking the formal training program to 1960.

The rapidly increasing need for physicians trained in the technics of physical medicine and rehabilitation is an obvious one. A mechanized age is producing physically handicapped individuals with relatively few physicians prepared to aid in their rehabilitation. This is a field to which doctors of osteopathy are conditioned by virtue of both their philosophy of medicine and their training. Dr. Pritchard urges that all of our colleges and our approved hospitals give serious consideration to the creation of a department of physical medicine and rehabilitation adequate for approved residency, fellowship, and preceptorship training in the specialty.

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Pan American Medical Association.—

Interested osteopathic physicians would be welcomed as associate members of the Pan American Medical Association, a 26-year-old organization devoted to interchanging medical knowledge and friendship among doctors of the American nations. The credo of the Association explains much of its breadth of purpose: "The practice of medicine has no national, racial or religious boundaries." The dues are $10.00 annually. Those interested can secure further information by writing the Association, attention Joseph Jordan Eller, M.D., president, 745 Fifth Avenue, New York 22, N.Y. Their Ninth Inter-American Cruise Congress was held January 6-22, 1954, aboard the S/S Nieuw Amsterdam and in four Latin-American cities where PAMA chapters are located. The proceedings of the 1954 Congress indicate that it was a meeting of high professional worth consistent in every way with the ideals of the Association.

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Rehabilitation Projects.—

The medical editor of the *New York Times*, Howard A. Rusk, M.D., recently pointed out that national governments throughout the world are showing increasing concern for the welfare of their disabled. In this effort they are working closely with the United Nations and its specialized agencies for aid in establishing rehabilitation services. Among the rehabilitation projects around the world that UN aided last year are the following:

Rehabilitation center for the blind in Egypt.

Physical therapy school and center in Bombay, India, to train therapists for hospital service throughout India.

Surveys by visiting experts on problems of the physically disabled in Indonesia, Greece, Egypt, Turkey, and Korea; of the deaf in Yugoslavia; and of the blind in Iraq, Pakistan, and Yugoslavia.

National rehabilitation center in Venezuela.

National rehabilitation center for handicapped children in Israel.

Establishment of a national rehabilitation center for crippled children in Japan—for this Japanese personnel is to be trained aboard.

A crippled children's center in Lebanon.

In a comment on the significance of these projects, Dr. Rusk points out:

The emphasis some of the underdeveloped nations of the world are placing on rehabilitation services for their handicapped is symbolic of a new and growing concept in many of

these nations: recognition of the dignity of man and the worth of the individual in a free society. . . .

Medicine is moving into its newest phase—comprehensive medicine which will continue to be curative but which more and more will become a medicine of rehabilitation and eventually prevention.

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In Briefer Form.—

Through grants made by the Borden Company, Prescription Products Division, Burroughs Wellcome & Company, and others, the American Academy of Pediatrics, 610 Church St., Evanston, Illinois, has recently published a revision of the manual entitled "Standards and Recommendations for Hospital Care of Newborn Infants." It carries endorsements by a number of authoritative organizations, including the Children's Bureau of the Social Security Administration, Department of Health, Education, and Welfare. It is a very practical book and one of great value to all hospitals. . . . Dr. Jen-Yah Hsie, Associate Professor of Bacteriology, Des Moines Still College of Osteopathy and Surgery, presented a paper, "A Method for Selecting the Mutants of Streptomyes Griseus of Higher Streptomycin-Productivity," before the second annual Symposium on Antibiotics held in Washington, D.C., October 25-29, 1954. This symposium was sponsored by the Division of Antibiotics of the Food and Drug Administration, U.S. Department of Health, Education, and Welfare. . . . Dr. Charles S. Cameron, medical and scientific director of the American Cancer Society, has recently reported that cancer of the lung "is showing the most rapid increase ever ascribed to any non-infectious disease in medical history." The society raised $22,000,000 this year and will spend $5,500,000 of that sum for cancer research including lung cancer. . . . An article on water fluoridation under the by-line of its medical editor, Howard A. Rusk, M.D., was published in *The New York Times*, October 24, 1954, terming water fluoridation an "effective tooth decay foe." More than 20,000,000 people in the United States drink and use fluoridated water regularly, and another 13,000,000 live in communities that have approved fluoridation and are in the process of preparing the necessary installations for its use. The article is brief but highly informative. It answers many questions that have arisen in the minds of those undecided about the wisdom of this public health measure. . . . During the past year 2,500,000 men, women, and children were being treated for some form of mental disorder in mental hospitals, at psychiatric clinics, or in the offices of private psychiatrists, according to figures recently released by the National Association for Mental Health. Its president stated further that 5,000,000 additional persons who went to general hospitals for physical ailments were suffering from some mental or emotional disturbance.

Department of Public Affairs

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BUREAU OF PUBLIC EDUCATION ON HEALTH

CARL E. MORRISON, D.O.
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MIDYEAR MEETING OF THE BUREAU OF PUBLIC EDUCATION ON HEALTH

The Bureau of Public Education on Health will hold its midyear meeting at the Central Office in Chicago on December 9 and 10, 1954. In attendance at this meeting, in addition to the chairman, will be Robert E. Cole, vice chairman; Phil R. Russell; John P. Wood; C. E. Cryer; and Eugene D. Mosier. As is the custom, other officers and representatives of the Association will also be in attendance at this meeting. This will be the first meeting presided over by the Bureau's new chairman, Carl E. Morrison, and the first meeting which C. E. Cryer, Bureau member newly appointed in 1954, will attend.

The Bureau on Public Education on Health will consider many matters affecting the public education on health program of the profession. Doctors of osteopathy today possess unlimited licenses, issued on the basis of the education provided in the osteopathic colleges, to practice their profession in thirty-four states, the District of Columbia, and the Territory of Hawaii. In all it is estimated that some 93 per cent of the members of the profession are located in the unlimited states. The scope and breadth of a public education on health program, however, far exceeds the subject of a practice act alone. Unlike the situation some 100 years ago when physicians and surgeons were not licensed, nor public health laws in effect, with few exceptions, the profession today must recognize that its contribution to the public health of the nation is affected by laws enacted under the police powers of the states. Progressive public health laws are needed today to encourage and improve upon the means and methods by which health services are provided.

A public health law which has been enacted to accomplish a valid public health objective is beneficial to the healing art professions and also to the public. If, however, such laws are enacted to monopolize a particular area of health services or to restrict or limit unduly or unreasonably the professional services of a competent health personnel, then such laws are a detriment to the people and constitute an undue burden, further hindering the improvement of health care. All areas, therefore, of public health activity will be discussed and considered during the Bureau meeting. A forward and progressive program of the osteopathic profession requires constant review and analysis. Such a review and analysis will be the main purpose of the forthcoming midyear meeting of the Bureau.

Divisional societies of the osteopathic profession also have a heavy responsibility in carrying out their obligation to provide complete health services to the people in their states. This obligation encompasses not only the availability of medical and surgical services through duly licensed osteopathic physicians but also the sponsorship of hospitals and related health facilities and the enactment of public health laws needed to safeguard the health of the people of their state.

In the various states the public education on health program will differ in certain respects according to the differences in the legal status of the profession and also according to the degree of progress that has been made by the profession toward its health goals. These public health laws have been or will be enacted by state legislatures.

Characteristics of state legislative bodies vary considerably throughout the country. The official names of legislative bodies differ, although the terms "Legislature" and "General Assembly" are most frequently used. For the respective legislative units the terms "Senate" and "House of Representatives" are most commonly used. The salaries or compensations of legislators varies from a high of $10,000 per biennium in Illinois and New York to a low of $200.00 per biennium in New Hampshire.

At the 1953 sessions of the state legislatures the Republican party controlled twenty-seven of the Senates and twenty-eight of the Houses of Representatives. In three Senates and two

Houses of Representatives there were no Republican members. Democrats were not present in only one state Senate. In two states the legislators are elected in a nonpolitical manner. Nebraska has the only unicameral legislature. The terms of office for state senators are usually 4 years, and those for members of the House of Representatives are 2 years. The state Senates in Delaware and Nevada have only seventeen members, and the state Senate with the largest number of members is Minnesota with sixty-seven. The smallest House of Representatives is found in Delaware with thirty-five members and the largest in New Hampshire with four hundred.

Legislative procedures relating to such matters as the executive veto, bill introduction and reference, length of legislative sessions, rules relating to committees and hearings, votes necessary for House or Senate action, and procedure relating to the official record and printing of bills vary throughout the state legislatures. These differences throughout the country affect the mode and manner in which public health laws are enacted. In all the states, however, public health laws will be enacted and the profession in each state will accept its duty and obligation to give due consideration to such proposed laws as are in the interest of the public health and welfare.

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STATE AND WHITE HOUSE CONFERENCES ON EDUCATION

Pursuant to Public Law 530, passed on July 26, 1954, by the 83rd Congress, authorizing State and White House Conferences on Education, Congress appropriated $900,000, of which $700,000 is for grants to the States, alloted on a population basis, with a minimum appropriation of $5,000 to each.

Under date of September 20, 1954, letters from three Federal officials were addressed to the States respecting the proposed Federal and State conferences. President Eisenhower wrote the governors inviting them to call conferences of citizens and educators to develop action programs to meet their problems. Health, Education and Welfare Secretary Oveta Culp Hobby wrote the State governors offering the resources of HEW "to make these conferences contribute significantly to improve education for the youth of our country." Commissioner of Education, S. M. Brownell, wrote to each chief State school officer outlining a few of the basic considerations of the Conference Act.

Background information, furnished by the U. S. Office of Education to the States, contains the following significant information:

We are short trained manpower in many fields: we need more scientists, we need more doctors and dentists, we need more teachers. At the same time, we need educated citizens who can contribute fruitfully to the complex demands a free society imposes on men of good will to act wisely for the common good . . .

Experience suggests that the following areas are foremost in the attentive consideration of Americans interested in improving education.

A. Providing Education to Meet the Needs of Individuals and of a Free Society
   1. What are the bases for deciding what education should be?
   2. What should education accomplish?
   3. Who shall be educated and to what extent?
   4. What shall be the educational responsibilities of the home, school, church, libraries and other neighborhood agencies, institutions, and instructional media?

B. Enlisting and Maintaining an Adequate Supply of Well-Prepared Teachers
   1. How can the status of the profession be improved to attract and retain greater numbers of able persons?
   2. What preparation is needed by those who teach?
   3. How can teachers be used more effectively?

C. Providing School Buildings and Equipment
   1. What are the needs for elementary, secondary and higher education?
   2. How will the costs be cared for?
   3. How can the greatest efficiency and economy be effected?

D. Financing Education
   1. What are the respective responsibilities of families, industry, localities, State and Federal Governments for elementary, secondary, vocational, higher, adult, professional education?
   2. What changes are needed to provide adequate education? e.g., property valuations, tax and bond limits, State funds for buildings and operation, sources of revenue?
   3. What are the special problems of the privately supported school or college?

E. Organizing Education
   1. What changes in organization are needed to improve educational effectiveness in individual schools, school districts, or the States' higher education?
   2. How can the public and the professional staff relate their activities most efficiently?
   3. What is the proper role of the local school district, the State, and the Federal Government in education? . . .

Public Law 530, authorizing the State and White House Conferences on education, provides the machinery whereby citizens in each State can develop the kind of educational program they want and need by:

—Changing property assessments;
—Changing limitations on taxes and bonds;
—Reorganizing inefficient school districts;
—Expanding the facilities for higher education;
—Attracting capable teachers; and by
—Providing State aid for school construction.

Each State Conference can develop solutions to the problems of its State by:

—Bringing together a small group of representative citizens and educators to plan and prepare the materials for the larger citizen-educator conference;
—Studying local and State problems in education in the light of the facts so that study and discussion will lead to
—Mobilizing resources to solve the problems.

Lay citizens and educators will decide what needs to be done and then how to do it—across the board—by giving thought not only to the urgent problems of today but to those which face us ahead.

The White House Conference will serve a complementary purpose. It will:

—Emphasize the importance of education to the national well-being;
—Report on the progress being made in the several States;
—Summarize the resources available and needed to keep American education operating at the level essential for national security and well-being;
—Demonstrate clearly what the citizens of the forty-eight States can do and want to do to meet their education needs;
—Give great impetus to the speed-up in educational efforts needed in these coming years throughout the country;
—Show citizens the nationwide significance of local schooling.

There is no illusion that the White House Conference will solve the problems of education in this country, but it can be an important and helpful means for stimulating constructive progress . . .

The White House Conference is being planned and managed by a Committee of citizens and educators appointed by the President and assisted by a professional staff.

The White House Conference Committee is representative of varying political, religious, racial, educational, and non-school interests.

The Committee operates as an independent agency directly responsible to the President. It is not a part of the Office of Education, though it is being assisted by the resources of the Office of Education. It has the greatest possible freedom to secure staff and control expenditures within the limitations of an approved budget. It decides on the agenda for the Conference, its plan of organization, the participation in Conference matters of representatives from the States. It gives every possible assistance to requests from State groups. It is responsible for follow-up reports to the Nation at the conclusion of its meetings . . .

It is anticipated that the State Conferences will be held between the fall of 1954 and the summer of 1955.

It is expected that the conferences will consider education broadly, i.e., from early childhood through higher and adult levels and as provided through home, school, church, and other neighborhood institutions, and through such media as the press, radio, television, movies, etc.

Careful pre-planning of the planning committee will be determined by each State as it desires. Presumably there would be these common features:

—Committee members would be selected through cooperative action between the Executive Office and the office of the Chief State School Officer.
—The conference committee would be representative of citizen and educator interests, with more laymen than professional educators.

Each State will naturally decide such things as:

—The size and composition of the conference;
—Its length, agenda, expected outcomes, follow-up measures;
—Whether the staff needed by the planning committee should be provided by the State Education Department, employed by the Committee, or both;
—How the Federal funds would be used as between committee expenses, conference arrangements, preparations of data and conference study materials, reports of the conference to the public and for the White House Conference.

Public Law 530 requires that each State prepare, for use of the White House Conference Committee, a report of the materials used for the State Conference, of the discussions, and of the findings or actions of the State Conference.

Current Literature

THE USE OF ESTROGEN AFTER THE MENOPAUSE

A state of confusion still exists regarding the indications and contraindications for estrogen administration during and following the menopause. An attempt to clarify this situation is reported by E. Kost Shelton, M.D., in the *Journal of the American Geriatrics Society*, October, 1954.

Estrogen is the natural physiologic accompaniment of the female youthful state. Its total deprivation results in psychic as well as body changes; the woman ages mentally and physically. Apparently there are two physiologic types of women at the menopause. In one estrogen deprivation is sudden and complete, and changes in skin and bone and atrophic changes of the breasts and reproductive organs are rapid and are accompanied by severe autonomic instability. In the other, although menstruation has ceased, submenstrual estrogen levels are elaborated for 10 or 15 years longer, and symptoms of estrogen deprivation may not be obvious until the patient is in her sixties. This is the reason one woman may have practically no menopausal symptoms while another may have distressing symptoms and, because the former has none, is accused of being neurotic.

Since 1900 the life expectancy of women has increased 24 years, but the time of the climacteric has remained the same. Subjective symptoms of the menopause can be aided with various drugs and with psychotherapy; estrogen will help postpone the aging process.

It is estimated that enough estrogenic material is manufactured in or imported into this country to treat several million women twice a week, and the author infers that most of this is utilized. If estrogen is a carcinogenic agent or a precursor of cancer, it would seem that the incidence of cancer of the breast and reproductive organs would have increased since the discovery and use of crystalline estrin in 1929. According to statistics, however, the death rates of cancer of the uterus and breast have not changed essentially between 1930 and 1950. In addition, life expectancy for the female has increased 9 years during this period, and it is well known that these types of cancer increase with age.

The author's answer to the argument that estrogen administration postpones physiologic adjustment to the climacteric is the answer of the women themselves—that, if they are destined to live for 20 to 30 more years, most of them are quite willing for the vasomotor phenomena, vaginal atresia, and associated symptoms of deterioration to occur in the sixties or seventies instead of the forties.

The argument that the menopause is a natural phenomenon not to be tampered with is compared with the arguments against anesthesia during delivery, against the use of cosmetics, and against everything progressive in life. The person who uses this argument fails to realize that he himself fights nature every day by pasteurizing milk, boiling instruments, vaccinating, flying against nature, and splitting the atom.

DIAPER CARE IN NURSERIES

A diaper-handling method for small hospitals containing less than fifty bassinets and cribs is reported by Ernest H. Watson, M.D., James L. Wilson, M.D., and Arthur Tuuri, M.D., in *The Journal of the American Medical Association*, August 28, 1954.

The process consists of three simple steps which result in clean, odorless, and bacteriologically sterile diapers. Diapers are removed from the infant and dropped, without rinsing, into a covered can which contains enough Watkins' solution to completely cover the diaper. Four ounces of solution are used for each gallon of water and the diapers allowed to remain in the solution for at least 2 hours. Diapers are washed in a home-sized automatic washer that rinses, washes with soap, and rinses three times and then dried immediately in an automatic dryer.

With the use of this relatively inexpensive laundry equipment it was found that all washing, drying, and folding of diapers for a ward containing between 20 and 30 infants could be done by one ward maid in one 8-hour work shift. This work did not take all of the maid's time, and she also did other work.

With this method the total number of diapers for use in the ward needed to be only slightly greater than the daily supply instead of the usual four times that number which is necessary because of the number circulating between hospital and laundry.

Studies made of cultures taken at the end of the rinsing process indicated some growth of coliform organisms in 3 of 11 batches examined. Forty-eight hours after the drying process there was no growth of organisms in any instance.

DIFFERENTIAL DIAGNOSIS AND MANAGEMENT OF COUGH

Since cough is so frequently a symptom of respiratory disease, the physician may forget that it is a complex reflex mechanism which may be initiated by many causes. The physiology and purpose of the cough reflex which must be understood before the differential diagnosis can be made are discussed by Joseph J. Furlong, M.D., in *California Medicine*, November, 1954.

The purpose of cough is to aid in the removal of irritants, foreign bodies, excess secretion, or exudates from the bronchial tree. A cough which accomplishes this is a useful cough; in addition, cough can be useless or harmful. Ciliary action in the trachea and bronchi, normal secretions, rhythmic contraction and dilatation of the smooth muscle of the bronchi, and the massaging effect of the respiratory movements on bronchial mucus in health keep the lower respiratory tract free, but they cease or are impaired in disease. Cough induced in such cases is useful.

Questioning of the patient yields considerable help in the diagnosis of cough. Cough which has been present for only a short time is probably that of upper respiratory infection, whereas one which is of several weeks' duration is more likely to represent a serious disease. The physician should suspect myocardial insufficiency and congestive heart failure if cough occurs on exertion. Asthma or a foreign body is suggested by cough associated with wheezing. In addition to information pertaining to the duration and onset of cough, it is important to ask the patient if he brings up anything when he coughs and, if so, what.

Nonproductive cough may arise from numerous causes and sources: the external ear, nose, pharynx and larynx, mediastinal compression of the trachea, bronchogenic carcinoma, early tuberculosis, pulmonary congestion from cardiac disease, worms, and nervousness.

Treatment of cough is directed to determining and treating the cause, but, in many cases, cough itself is treated because it is useless or harmful or because it is impossible to eliminate the cause. The four distinct points of attack in treating cough are the cough center, the peripheral reflex sensitivity, the bronchi, and the bronchial secretions.

If the cough is tight and the volume of secretions deficient or loose with excessive secretions, an attempt to change the bronchial secretions is indicated.

Sometimes increased coughing may be necessary in order to clear the chest of secretions because the cough is too feeble to accomplish its purpose.

Book Notices

HISTOPATHOLOGY OF THE SKIN. By Walter F. Lever, M.D., Clinical Associate in Dermatology, Harvard Medical School; Assistant Dermatologist, Massachusetts General Hospital; Associate in Dermatology, Peter Bent Brigham Hospital; Consulting Dermatologist, Massachusetts Eye and Ear Infirmary, The Children's Hospital and Robert Breck Brigham Hospital. Ed. 2. Cloth. Pp. 518, with illustrations. Price $12.00. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1954.

The second edition of "Histopathology of the Skin" is an expansion and improvement of the first edition which was itself excellent. Many plates have been replaced and others, including some color, have been added. The text has also been brought up to current thinking. Each disease considered is concisely and briefly described.

The expansion is probably most notable in the parts of the text dealing in the differential factors of the histopathology of the vesicular lesions. The L.E. cell of lupus erythematosus is discussed in detail. There is also a thorough discussion of the various phases of this disease. In commenting on leukoplakia of the vulva, the interesting comment is made that its malignant potential: "is squamous-cell carcinoma, grade ½." We would suggest that all students read for their general enlightenment the chapter on pigmented nevi and malignant melonoma.

While histopathology may seem a static study to the casually interested, it progresses steadily as a result of the efforts of diligent workers, of whom Lever is certainly one of the most devoted. The reports of his work and the advancement of the science in recent years justify a new edition which is highly recommended to all pathologists, dermatologists, and radiologists.

A. P. Ulbrich, D.O.
D. Koprince, D.O.

A MANUAL OF TROPICAL MEDICINE. By Thomas T. Mackie, M.D., Colonel, M.C., A.U.S. (Retired), Chairman, The American Foundation for Tropical Medicine; Consultant in Tropical Medicine, The Roosevelt Hospital, New York City, The Veterans Administration Hospital, West Haven, Connecticut, and The Norwalk Hospital, Norwalk, Connecticut; Formerly Professor of Preventive Medicine, Wake Forest College, The Bowman Gray School of Medicine; George W. Hunter, III, Ph.D., Colonel, M.S.C., U.S.A., Chief, Section of Parasitology-Entomology, Fourth Army Area Medical Laboratory, Brooke Army Medical Center, Fort Sam Houston, Texas; Professor of Parasitology, Affiliated Units of the Graduate School, Baylor University; Formerly Chief, Department of Medical Zoology, 406th Medical General Laboratory, Tokyo, Japan; and C. Brooke Worth, M.D., Field Staff Member, Division of Medicine and Public Health, The Rockefeller Foundation. Ed. 2. Cloth. Pp. 902, with illustrations. Price $12.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1954.

Since this book was first published in 1945, the United States have been drawn even deeper into political, economic, and cultural involvement throughout the world. In the field of medicine, this has meant increased responsibility in controlling preventable endemic and communicable diseases, which are found in those parts of the world where Americans have been taken. Thus, further impetus was given to research in the fields of medicine and public health in the tropics, resulting in noted progress in the areas of epidemiology, treatment, and disease control. This new knowledge pushed the first edition into obsoleteness and necessitated this second edition, which extensively revises the original text through deletion, substitution, and rewriting. The shift of emphasis on some diseases and the experience of the authors, who are recognized authorities in their respective fields, brought into being new chapters on the virus encephalitides, trachoma, rickettsialpox, trench fever, leptospiral diseases, leprosy, toxoplasmosis, gnathostomiasis, trichostrongyliasis, the nutritional diseases, effects of heat, epidemic hemorrhagic fever, and medically important mollusks. Extensively revised chapters include those dealing with the rickettsial diseases, relapsing fever, the dysenteries, malaria, schistosomiasis, filariasis and laboratory technics. Despite the comprehensive revision of the original text, the second edition retains the primary objective of presenting the essential practical aspects of the epidemiology, diagnosis, treatment, control, and prophylaxis of the more important tropical diseases.

This attractive book lives up to its name of "Manual," as it is so well organized that those who use it—members of the Armed Forces, clinicians, field workers, and students of tropical medicine—should have little difficulty putting their fingers quickly on the desired information. Bibliographies were omitted in the interest of limiting the size of the volume. The fifty-three-page index, ten-page table of contents, generous use of subheads, highly readable typography, excellent reproduction of illustrations, and good paper quality facilitate study of the text.

THE EPILEPSIES. Electro-Clinical Correlations. By Henri Gastaut, Professeur à la Faculté de Médecine de Marseille, Chef du Service d'Electrobiologie des Hôpitaux. Translated by Mary A. B. Brazier, Neurophysiologist, Massachusetts General Hospital, Boston. Cloth. Pp. 149, with illustrations. Price $4.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1954.

Here is an able translation of a monograph on epilepsy, originally written in French. Within the scant 149 pages is packed abundant information about epilepsy—principles for an electroclinical classification, clinical analysis, physiologic interpretation of symptoms, an etiologic study, an anatomic study, diagnosis, and treatment. The text is based entirely on Gastaut's personal observations of the seizures plus electroencephalographic recordings and cinematographic films. Visual quality is also added by the cross-sectional anatomical drawings and reproductions of electroencephalographic recordings.

Summarized in the preface by Wilder Penfield is the value of this book: ". . . the clinician of today may follow in the footsteps of John Hughlings Jackson toward an understanding of epilepsy. But, beyond that, he too may hope to point the way to greater knowledge of the nervous mechanisms of the body and the mind. Docteur Henry Gastaut has succeeded in doing this as a clinician, and also in his capacity of neuropathologist and electrophysiologist."

SEVENTY-FIVE YEARS OF MEDICAL PROGRESS, 1878-1953. First Western Hemisphere Conference of the World Medical Association. Edited and with a Foreword by Louis H. Bauer, M.D., F.A.C.P., Secretary-General, The World Medical Association; Past President, The American Medical Association. Cloth. Pp. 286. Price $4.00. Lea & Febiger, Washington Square, Philadelphia 6, 1954.

This book relating the technics of the present to the knowledge of the past is a result of the First Western Hemisphere Conference of The World Medical Association held in Richmond, Virginia, in April, 1953.

The volume presents a complete picture of contemporary medicine. It contains syntheses of modern practice in the nineteen medical specialties, including general practice, anesthesiology, internal medicine, obstetrics and gynecology, radiology, surgery, and psychiatry, to mention a few. Each of the twenty-six distinguished contributors is a recognized authority in his field.

Both the story of the past 75 years in medicine and the present extent of our knowledge are summarized in this book. Dr. Bauer, in his Foreword, points out the startling fact that medical scientists have learned more about the nature and treatment of disease and about its prevention in the past 75 years than in the previous 3,000 years. Because of the unusually rapid increase in modern specialization and the amazingly frequent new discoveries and theories, complete absorption of them all is almost impossible. Therefore this unique book should be invaluable to all who read it, for there is no similar compilation of medical progress.

More important, perhaps, than the excellence of the material presented is the attitude which prevails throughout the book. Each specialist relates his field to others, and attention is called repeatedly to the consideration of the patient as a whole person. In the chapter on psychiatry the Group for the Advancement of Psychiatry is quoted as saying, "If medical treatment is to become comprehensive, the teaching of medicine, from its very beginning, should be kept as close as possible to the person, the total human being." All contributors to the volume seem to share this view, and they look with fervor toward future advances, both in the concept of treating the patient as a whole and in the technical progress affecting this concept.

It is unfortunate that the quality of the contents of this book is not matched by the quality of its production. However, any typographical shortcomings are certainly offset by the invaluable information offered the reader.

BREAKING PATTERNS OF DEFEAT. The Effective Readjustment of the Sick Personality. By Richard L. Jenkins, M.D., Chief of Psychiatric Research, Psychiatry and Neurology Service, Veterans Administration, Washington, D.C. Cloth. Pp. 270. Price $6.75. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1954.

Many books have been written in recent years about the basis of personality disorder. With increasing frequency these writings are directed to the general practitioner or the nonpsychiatric specialist and are couched in nontechnical terms. This book by Jenkins is of this order. The author has made a real effort to bring into crystal clear perspective the background of later behavioral and feeling troubles and to follow this approach through to a therapeutic victory.

Chapter one states his premise:

. . . [The] degree of physical dependence creates in the young child a comparable emotional dependence on his parents. This dependence is usually focused on the mother, and it is she who is most concerned with the fundamental socialization of the child. The special significance of the father usually comes into greatest prominence later . . . whenever we see an individual who has gone through the early years of life without confidence in the affection and love of a parent-person, we see a badly warped and distorted personality, an individual much more handicapped in life than one who has merely a clubfoot.

In developing his subject the author begins with an excellent discussion of the rejected child. "The child who is reaching out hungrily for affection, love and acceptance, and who meets what he interprets as a rebuff, is hurt. Normal reactions to hurt are fear and hostility." This is illustrated by several case records; in fact, the author uses actual examples to clarify his points. Next to the problem of emotional security, the child needs growing room, that is psychologic space and an opportunity to grow to independent selfhood, to become a person in his own right. Discipline and limitation of movement are necessary, but certain rules apply here: (1) limit or restrict only when necessary, (2) limit in a reasonable manner, and (3) limit firmly in as kindly a manner as possible. Rebellion is not uncommon in children and must be met by measures that will preserve the child's sense of self-identity. The problem of anxious over-control is a real one, and the book deals with it well.

Succeeding chapters deal with particular forms of unfoldment of neurosis. Closely related to particular patterns are the mechanisms of integration of sex with love and life, parenthood and the dynamics of family relationships, and cultural differences. The author takes them up in this order.

Finally, in the last forty-five pages, the book discusses treatment and means of managing or correcting the problems discussed. Psychotherapy is understood by the author to be an art and a skill which involves mastery by the therapist of himself. It is likened to a game of checkers in that what the therapist does in each move depends upon what the other person does. The psychotherapeutic relationship is a controlled interpersonal relationship directed toward aiding the growth of the patient toward a more mature or satisfactory life adjustment. Much of the art depends upon the therapist's capacity to estimate what he can take, neither expecting too much of the patient nor keeping him too long at a dependent or a childlike level of relationship. Psychotherapy involves dealing successfully with the patient's sense and assertion of his individuality and also creating a release for the patient's pent up emotional tension. In addition it is concerned with reduction of guilt-anxiety, overcoming of a sense of inferiority, and promoting mental processes by which the patient's problems may be satisfactorily assimilated into his general pattern of thinking and acceptance of the world.

From these brief notes the general approach of the book can be appraised. To appreciate fully the clear presentation of the author, one must read the complete work. It can be recommended for the general physician and for others working in allied fields. The terminology is not technical, and the continuity of the subject matter is well maintained.

THOMAS J. MEYERS, PH., D.O., F.A.C.N.

TEXTBOOK OF PHYSIOLOGY. The Activities of the Living Body. By Caroline E. Stackpole, A.M., Formerly Associate in Biology, Teachers College, Columbia University, and Lutie Clemson Leavell, R.N., A.M., M.S., Associate Professor in Nursing Education, Teachers College, Columbia University. Cloth. Pp. 418, with illustrations. Price $5.00. The Macmillan Company, 60 Fifth Avenue, New York 11, 1953.

It would seem that this text would be useful in an undergraduate course, but its value to a medical school class is highly questionable. The clear outline drawings, the frequent charts and tables, and the discussion questions all make the text unformidable and readable, in spite of the rather elementary presentation which makes the text unsuitable for graduate work.

The construction of the book around eight fundamental problems of physiology is effective. The authors realize that the problem-solving approach which they recommend will lead the student into fields allied to physiology, for example, functional anatomy, chemistry, and physics. Further, they encourage the attempt to see the individual as a whole, which is indeed a praiseworthy approach to the study of any of the basic sciences.

MOTHER AND BABY CARE IN PICTURES. By Louise Zabriskie, R.N.; Director, Maternity Consultation Service, New York City; Formerly Lecturer, New York University; Night Supervisor, Lying-in Hospital, New York City; Field Director, Maternity Center Association, New York City. Ed. 4. Cloth. Pp. 244, with illustrations. Price $3.00. J. B. Lippincott Company, East Washington Sq., Philadelphia 5, 1953.

Revised for the fourth time since it was first published in 1935, this book continues to provide prospective parents with valuable information about birth—from the prenatal period through the first year of life. Entirely reset, this edition includes up-to-date information on nutrition, a fuller explanation of the mechanism of labor and delivery, and the latest methods on the immediate care of the baby. Also discussed are mental attitudes of the parents, how to use medical advice, and preparations for delivery. To make the book even more comprehensive, there are helpful chapters on mother's and baby's clothes and nursery needs. All this is presented in understandable prose, detailed illustrations, and helpful tables. It is truly a book that all parents will want to read and study before and after the birth of their children.

NERVOUSNESS, INDIGESTION AND PAIN. By Walter C. Alvarez, M.D., Emeritus Professor of Medicine, University of Minnesota (Mayo Foundation); Emeritus Consultant in the Division of Medicine, The Mayor Clinic. Popular Edition. Cloth. Pp. 235. Price $3.50. Harper & Brothers, 49 E. 33rd St., New York 16, 1954.

The term "psychosomatic" has been creeping into laymen's conversations with increasing frequency of late. Apparently aware of this trend, Harper and Brothers placed on the market a popular edition of this book, which was originally published in 1943. When Dr. Alvarez authored the text over a decade age, he was primarily concerned in advising fellow physicians how to care for neurotic and psychopathic patients who com-

plained of "nervousness, indigestion and pain." His book, the author says, "deals more with sick unhappy persons than with their diseases, more with symptoms and their meaning than with disease entities, and more with the puzzling, poorly understood, and poorly described abdominal discomforts and indigestions than with the well-known organic diseases such as gallstones and cancer." Among the ailments discussed are insomnia, menopause, constipation, colitis, food allergy, flatulence, so-called chronic appendicitis, pseudo-ulcer, "nervous vomiting," headache, migraine, gastritis, diarrhea, and pelvic troubles. In treating a patient for one or more of these disorders, Dr. Alvarez repeatedly points out the necessity for the stomach specialist to double as a psychiatrist.

The writer uses the practical and unique method of taking the reader into his office to show how an internist's mind works as he tries to make a diagnosis and as he handles difficult patients. This approach should prove helpful to physicians as well as to laymen, who may gain a better understanding of their illness and of the doctor who is trying to help them.

HUMAN EMBRYOLOGY. By Bradley M. Patten, Professor of Anatomy in the University of Michigan Medical School. Ed. 2. Cloth. Pp. 798, with over 1400 drawings and photographs, grouped as 453 illustrations and 2 plates, many in color. Price $12.00. The Blakiston Company, Inc., 575 Madison Ave., New York 22, 1953.

The scope or objectives of this excellent text have not been changed in its second edition. It presents in clear form the phases of human embryology which are of special interest to medical students and physicians. The author has, however, improved the written and graphic presentation by rewriting certain sections and adding a number of new illustrations.

Marked advances have made possible the revision of Chapters 4 and 6 in much more detail on the basis of actual human material. Also the account of the heart and great vessels has been extensively changed and expanded, and new illustrations have been added to give a clearer conception to some of the congenital defects which are now proving amenable to surgery.

The author has given special thought to developing those aspects of embryology which are important as background in other medical subjects. The volume presents human developmental processes, not as a series of still pictures of selected stages, but as a story of dynamic events, with emphasis on their sequence and correlative significance.

PRINCIPLES OF OCCUPATIONAL THERAPY. Edited by Helen S. Willard, B.A., O.T.R., Professor of Occupational Therapy, University of Pennsylvania School of Auxiliary Medical Services; Director, Philadelphia School of Occupational Therapy; and Clare S. Spackman, B.S., M.S.(Ed.), O.T.R., Associate Professor of Occupational Therapy, University of Pennsylvania, School of Auxiliary Medical Services; Director, Curative Workshop, and Director, Occupational Therapy Department, Hospital of the Graduate School of Medicine, University of Pennsylvania; Assistant Director, Philadelphia School of Occupational Therapy. Ed. 2. Cloth. Pp. 376, with illustrations. Price $5.50. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1954.

Occupational therapy is a method that dates back to the time when the Egyptians made use of music and games to assist the recovery of mental patients. Nevertheless, it was not until World War II that really great strides were made in the professional development of occupational therapy. So sudden and leaping was this progress that the field was caught with a shortage of adequate literature. Then, in 1947, Editors Willard and Spackman produced a book that did much to fill the void. Divided into two sections, "Basic Concepts" and "Applied Principles of Occupational Therapy," this text was the result of the collaboration of the editors with eighteen other authorities on occupational therapy.

Now, 7 years later, here is a revised edition that brings the reader up to date on this rapidly developing profession. There is a new chapter on organization and administration. The chapters on the treatment of the mentally ill and the care of the blind and of patients with cerebral palsy have been rewritten. New sections have been added on adapted equipment, geriatrics, and treatment of poliomyelitis, hemiplegias, multiple sclerosis, and paraplegias. This textbook should prove valuable to doctors, nurses, and social workers as well as to occupational therapists.

DIABETIC CARE IN PICTURES. Simplified Statements with Illustrations Prepared for the Use of the Patient. By Helen Rosenthal, B.S., Former Chief, Frances Stern Food Clinic, The Boston Dispensary; Former Assistant in Medicine, Tufts College Medical School, and Joseph Rosenthal, M.D., Physician-in-Charge, Diabetes Clinic, The Boston Dispensary; Assistant Professor of Medicine, Tufts College Medical School; Associate Staff, Joseph H. Pratt Diagnostic Hospital. (All Units of the New England Medical Center). Paper. Pp. 164, with illustrations. Price $3.00. J. B. Lippincott Company, East Washington Sq., Philadelphia 5, 1953.

When the first edition of this book was reviewed in a 1947 issue of THE JOURNAL, it was said to be "invaluable to patient and physicians alike" and "an example of effective visual education." The same can be said of this new edition, which has been revised to include the latest knowledge of and methods in the treatment of diabetes. There is new information on insulin —preparations, equipment, and injection technics. Presented are new illustrations of food exchanges, a revised exchange sheet on dairy products, and a comprehensive table of food values. The patient is again reminded of the importance of physical and mental hygiene as well as personal and social factors.

The step-by-step pictures and the succinct, clearly written text combine to make this book an easy-to-understand guide for diabetic patients, who can thereby get the full benefit of their physician's care and advice.

LECTURES ON GENERAL PATHOLOGY, Delivered at the Sir William Dunn School of Pathology, University of Oxford. Edited by Sir Howard Florey, Professor of Pathology. Cloth. Pp. 733, with illustrations. Price $13.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1954.

This British import brings from overseas the essence of the University of Oxford course in general pathology through the medium of lectures that have been delivered to its students. Because Editor Florey believed that these lectures, although originally prepared for medical students, could also be of value to those more advanced in their medical work, he compiled them into this 733-page edition. It is emphasized in the preface that the lectures do not form a complete survey of general pathology, but deal mostly with subjects of special interest to the authors. "In particular they attempt to treat of some of the fundamental changes that take place in the body in response to injury, . . . and to discuss some present-day views about the nature and causes of such changes," is the way Florey phrases it.

The text, fittingly opened with The History and Scope of Pathology by Florey, who authors ten of the thirty-seven lectures, includes lectures by nine other educators. Except for the multipart lectures, each article is self-contained. Among the subjects discussed are inflammation, degenerative changes and some of their consequences, cellular and tissue reactions to viruses, the reactions of the blood to injury, antigens and antibodies, pathogenicity and virulence of micro-organisms, acquired immunity, anaphylaxis, regeneration, and hemorrhage. The book is adequately illustrated with drawings, photographs, diagrams, and charts. Especially interesting are the reproductions of historical drawings included in the opening chapter. Comprehensiveness is further added by a list of references at the end of each lecture, reminding one of the mimeographed bibliographies of recommended outside reading that are inevitable partners to college and university courses.

(Continued on page 264)